Source: **T1**

Title: **CR's to TS 34.123-1 v4.0.0 for approval**

Agenda item: **5.1.3**

Document for: **Approval**

This document contains 17 CRs to TS 34.123-1 v4.0.0. These CRs have been agreed by T1 and are put forward to TSG T for approval.

NOTE: TS 34.123-1 R99 and TS 34.123-1 Rel-4 were merged at the last T#13. This means that test cases for both releases are included in TS 34.123-1 Rel-4 and therefore this is the only release being maintained.

CR related to maintenance of R99 and Rel-4:

Spec	CR	Rev	Release	Subject	Cat	Version Current	Version New	Doc-2nd-Level	Workitem	Releases affected
34.123-1	113		Rel-4	Clause 7.3: PDCP testing: additional configuration information	F	4.0.0	4.1.0	T1-010406	TEI	R99, Rel-4
34.123-1	114		Rel-4	Clause 7.4: BMC testing: update for BMC testing	F	4.0.0	4.1.0	T1-010407	TEI	R99, Rel-4
34.123-1	115		Rel-4	Clause 7.2: Update of UM and AM RLC test cases	F	4.0.0	4.1.0	T1-010408	TEI	R99, Rel-4
34.123-1	116		Rel-4	Idle mode tests (34.123-1)	F	4.0.0	4.1.0	T1-010409	TEI	R99, Rel-4
34.123-1	117		Rel-4	Removal of TBD Power Levels in section 6	F	4.0.0	4.1.0	T1-010410	TEI	R99, Rel-4
34.123-1	118		Rel-4	Idle Mode Test Parameters for Multi-mode environment (2G/3G) TDD	F	4.0.0	4.1.0	T1-010411	TEI	R99, Rel-4
34.123-1	119		Rel-4	Traffic Volume Measurement test cases (34.123-1 section 8.4)	F	4.0.0	4.1.0	T1-010412	TEI	R99, Rel-4
34.123-1	120		Rel-4	New interRAT test cases	F	4.0.0	4.1.0	T1-010413	TEI	R99, Rel-4
34.123-1	121		Rel-4	Corrections to Annex A	F	4.0.0	4.1.0	T1-010414	TEI	R99, Rel-4
34.123-1	122		Rel-4	Clause 12 Packet Switched Mobility Management	F	4.0.0	4.1.0	T1-010415	TEI	R99, Rel-4
34.123-1	123		Rel-4	Update to GMM test cases	F	4.0.0	4.1.0	T1-010416	TEI	R99, Rel-4
34.123-1	124		Rel-4	Update of interoperbility radio bearer test cases for FDD.	F	4.0.0	4.1.0	T1-010417	TEI	R99, Rel-4
34.123-1	125		Rel-4	Update to SMS test specification	F	4.0.0	4.1.0	T1-010418	TEI	R99, Rel-4
34.123-1	126		Rel-4	Corrections to RRC test cases	F	4.0.0	4.1.0	T1-010419	TEI	R99, Rel-4
34.123-1	127		Rel-4	RRC Connection Management Procedure Tests for the TDD options	F	4.0.0	4.1.0	T1-010420	TEI	R99, Rel-4

CR related to Low Chip Rate-TDD:

Spec	CR	Rev	Release	Subject	Cat	Version Current	Version New	Doc-2nd-Level	Workitem	Releases affected
34.123-1	128		Rel-4	Annex A Default RRC Message Contents for 1.28Mcps TDD Mode	F	4.0.0	4.1.0	T1-010421	LCRTDD	Rel-4
34.123-1	129		Rel-4	Radio Bearer Tests for 1.28 Mcps TDD Mode	F	4.0.0	4.1.0	T1-010422	LCRTDD	Rel-4

3GPP TSG-T1 Meeting #13
Cancun, Mexico, 29th November – 30th November 2001
Tdoc T1-010406

3GPP TSG-T1 SIG Meeting #20
Cancun, Mexico, 26th November – 28th November 2001
Tdoc T1S-010307r1

CR-Form-v4

CHANGE REQUEST

⌘ **34.123-1** **CR** **113** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Additional configuration information and corrections for L2/PDCP testing
Source:	⌘	CETECOM GmbH
Work item code:	⌘	TEI
Date:	⌘	2001-11-22
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	Correction of L2/PDCP testing and additional configuration information for test case 7.3.2.2.4, 3GPP TS 34.123-1, clause 7.3
Summary of change:	⌘	This CR consists of two parts: 1. correction of TS 34.123-1, clause 7.3, version 4.0.0 in reference to already agreed CR T1S-010296 (Busan meeting T1S#19): During renaming of T1S-010182r2 to T1-010296, some revision marks were missing. Due to partially not existing revision marks, some changes are not implemented in TS 34.123-1 v4.0.0. The first part of this CR is to introduce the missing correction of T1S-010182r2 in TS 34.123-1v4.0.0. 2. Based on part one of this CR, the following corrections are recommended (highlighted in yellow color): For test case 7.3.2.2.4, there are special Radio Bearer configurations (combined RB UM and RB AM) used. Therefore, the test case applicability is extended accordingly (clause 7.3.2.2.4.1 and a PICS item " Support of UM RB and AM RB " is included accordingly. In addition, this special Radio Bearer configuration information is included in clause 7.3.2.2.4.6 to be used only in this test case.
Consequences if not approved:	⌘	PDCP tests are not corrected

Clauses affected:	⌘	clause 7.3 PDCP
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	Releases affected: R99 and REL-4

7.3 PDCP

7.3.1 General

7.3.1.1 General assumptions

If not otherwise mentioned, the same procedures as used in RRC test specification (TS 34.123-1) or in the Generic procedure (TS 34.108) applies to reach Initial conditions for PDCP testing. In this test description, common test sequences for PDCP (clause 7.3.4.1) are defined and are applied either as preamble or post amble to establish or release a Packet Switched (PS) connection for a test case.

If not explicitly described, the same message contents and settings are applied as described in the RRC test description default settings.

Detailed IP header compression coding mechanism as well as mechanism related error recovery and packet reordering described in IETF RFC 2507 are not verified.

For PDCP testing TCP/IP data type and UDP/IP data type as Non-TCP/IP data types are applied for IP data.

An UE supporting IP Header compression protocol RFC 2507 shall be capable to store a header compression context of at least 512 bytes (Integer).

It shall be possible to reconfigure PDCP settings while UE test loop mode 1. With the applied test method using UE test loop mode 1, the UE as Originator and Receiver of PDCP SDUs (concurrent transmission) is tested.

7.3.1.2 Common Test sequences and Default message contents for PDCP

General

The settings and parameter used in the ”Common Test sequences for PDCP” are described in the ”Default PDCP Message Contents”. If not explicitly shown there, the message contents are identical with the default contents for the same message type of layer 3 messages for RRC tests, to establish a packet switched session or connection. The contents of test case specific message parameters are described in the test case (Expected Sequence). If not explicitly shown, default settings and parameter are used as message content for all Common Test sequences.

7.3.1.2.1 Common Test sequences for PDCP

7.3.1.2.1.1 Setup a UE terminated PS session using IP Header compression in AM RLC (using UE Test loop test mode 1)

Initial Conditions

UE is in Idle mode.

Test procedure

After having received the System Information, the SS starts to setup a RRC connection. After connection establishment and Radio Bearer Setup, the UE test loop mode 1 is activated and the UE test loop mode 1 is closed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		SYSTEM INFORMATION	
2	←		PAGING TYPE 1	CN domain identity: PS domain Paging cause: interactive session
3	→		RRC CONNECTION REQUEST	
4	←		RRC CONNECTION SETUP	Connection Setup message PS sessions in AM RLC used in RRC testing matches here
5	→		RRC CONNECTION SETUP COMPLETE	
6	←		ACTIVATE RB TEST MODE	
7	→		ACTIVATE RB TEST MODE COMPLETE	
8	←		RADIO BEARER SETUP	The Radio Bearer configuration is as described in TS 34.108, clause 6.10, Prioritised RAB No. 23: QoS parameter: Traffic Class: Interactive or Background, max. UL:64 kbps max. DL:64 kbps, Residual BER as described in TS 34.108, clause: 6.10.
9	→		RADIO BEARER SETUP COMPLETE	
10	←		CLOSE UE TEST LOOP	The SS initiates UE test loop mode 1, indicated by the Parameter: "UE test loop mode" 1 (X1=0 and X2=0) The "DCCH dummy transmission" not used: disabled: (Y1=0)
11	→		CLOSE UE TEST LOOP COMPLETE	After having received the test mode acknowledgement, the UE test loop mode 1 is activated.

Specific message contents

The contents of test case specific message parameters are described in the test case (Expected Sequence). Default contents of messages are described in the clause Default PDCP Message Contents.

7.3.1.2.1.2 Setup a UE terminated PS session using IP Header compression in UM RLC (using UE Test loop test mode 1)

Initial Conditions

UE is in ~~I~~idle mode.

Test procedure

After having received the System Information, the SS starts to setup a RRC connection. After connection establishment and Radio Bearer Setup, the UE test loop mode 1 is activated and the UE test loop mode 1 is closed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		SYSTEM INFORMATION	
2	←		PAGING TYPE 1	CN domain identity: PS domain Paging cause: interactive session
3	→		RRC CONNECTION REQUEST	
4	←		RRC CONNECTION SETUP	Connection Setup message PS sessions in UM RLC used in RRC testing matches here
5	→		RRC CONNECTION SETUP COMPLETE	
6	←		ACTIVATE RB TEST MODE	
7	→		ACTIVATE RB TEST MODE COMPLETE	
8	←		RADIO BEARER SETUP	The Radio Bearer configuration is as described in TS 34.108, clause 6.10, Prioritised RAB No. 23: QoS parameter: Traffic Class: Interactive or Background, max. UL:64 kbps max. DL:64 kbps, Residual BER as described in TS 34.108, clause: 6.10.
9	→		RADIO BEARER SETUP COMPLETE	
10	←		CLOSE UE TEST LOOP	The SS initiates UE test loop mode 1, indicated by the Parameter: ”UE test loop mode 1” (X1=0 and X2=0) The ”DCCH dummy transmission” not used: disabled: (Y1=0)
11	→		CLOSE UE TEST LOOP COMPLETE	After having received the test mode acknowledgement, the UE test loop mode 1 is activated.

Specific message contents

The contents of test case specific message parameters are described in the test case (Expected Sequence) Default contents of messages are described in the clause Default PDCP Message Contents.

7.3.1.2.1.3 Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)

Initial Conditions

UE is in connected mode, a UE test loop mode 1 for PDCP is activated, and the UE loop mode 1 is ”closed”.

Test procedure

The UE opens the UE test loop mode 1, deactivates the test mode and the PS session, releases the Radio Bearer and enters Idle mode.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		OPEN UE TEST LOOP	The SS terminates the UE test loop mode 1, (see described parameter)
2	→		OPEN UE TEST LOOP COMPLETE	After having received the test mode acknowledgement, the test loopmode 1 is deactivated.
3	←		DEACTIVATE RB TEST MODE	SS deactivates the RB test mode
4	→		DEACTIVATE RB TEST MODE COMPLETE	UE shall confirm the previous message. Afterwards, the UE returns to normal operation
5	←		RRC CONNECTION RELEASE	SS terminates the connection
6	→		RRC CONNECTION RELEASE COMPLETE	UE confirms the connection release and returns to Idle mode

Specific message contents

The contents of test case specific message parameter is described in the test case (Expected Sequence). Default contents of messages are described in the clause Default PDCP Message Contents.

7.3.1.2.2 Default PDCP Message Contents

This clause contains the default values of RRC messages used for PDCP testing, other than those specified in TS 34.108 clauses 6 and 9, and default values of PDCP messages. Unless indicated otherwise in specific test cases, only PDCP related specific message contents are described here which shall be transmitted by the system simulator in RRC messages, and which are required to be received from the UE under test. If not explicitly described, the message contents are identical with the default contents for the same message type of layer 3 messages for RRC tests, to establish a packet switched session or connection.

The necessary L3 messages are listed in alphabetic order, with the exception of the SYSTEM INFORMATION messages, where it is the information elements which are listed in alphabetic order (this is because some information elements occur in several SYSTEM INFORMATION types).

In this clause, decimal values are normally used. However, sometimes a hexadecimal value, indicated by an "H", or a binary value, indicated by a "B" is used.

Default SYSTEM INFORMATION:

NOTE: SYSTEM INFORMATION BLOCK TYPE 1 (except for PLMN type ”GSM-MAP”), SYSTEM INFORMATION BLOCK TYPE 8, SYSTEM INFORMATION BLOCK TYPE 9, SYSTEM INFORMATION BLOCK TYPE 10, SYSTEM INFORMATION BLOCK TYPE 14, SYSTEM INFORMATION BLOCK TYPE 15 and INFORMATION BLOCK TYPE 16 messages are not used.

Contents of CONNECTION SETUP message:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement - System specific capability update requirement list	 TRUE UE only supports 1 system

Contents of CONNECTION SETUP COMPLETE message:

Information Element	Value/remark
UE radio access capability - Conformance test compliance - PDCP Capability - Max PDCP SN - Support of lossless SRNS relocation - Supported algorithm types - RFC2507 - Maximum MAX_HEADER - Maximum TCP_SPACE - Maximum NON_TCP_SPACE - RLC Capability - Transport channel capability - RF Capability - Physical channel capability - UE multi-mode/multi-RAT capability - Security Capability - LCS Capability - Measurement capability	Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings
UE system specific capability	Value will be check. UE must include the classmark information for the supported system

Contents of ACTIVATE RB TEST MODE message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000100B

Contents of ACTIVATE RB TEST MODE COMPLETE message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000101B

Contents of DEACTIVATE RB TEST MODE message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000110B

Contents of DEACTIVATE RB TEST MODE COMPLETE message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000111B

Contents of CLOSE UE TEST LOOP message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000000B
UE test loop mode	000000100B (X2=0 and X1=0 for UE test mode 1, Y1=0 DCCH dummy transmission disabled)
UE test loop mode 1 LB setup	
- Length of UE loop mode 1 LB setup IE	4 octets
- LB setup list	
- LB setup RAB subflow #1	
- Z13…Z0 (Uplink RLC SDU size in bits)	0…16383 (binary coded, Z13 most significant bit); value as negotiated

Contents of CLOSE UE TEST LOOP COMPLETE message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000001B

Contents of OPEN UE TEST LOOP message:

Information Element	Value/remark
IE Identifier (only in AM)	1000xxxx
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000010B

Contents of OPEN UE TEST LOOP COMPLETE message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000011B

7.3.2 IP Header Compression and PID assignment

7.3.2.1 UE in RLC AM

7.3.2.1.1 Transmission of uncompressed Header

7.3.2.1.1.1 Definition and applicability

Applicable for all UEs supporting RLC AM and a Radio Bearer as described in the Common Test Sequences. The UE shall be capable to deal with TCP/IP and UDP/IP data packets with uncompressed IP header.

7.3.2.1.1.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

- PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

- PID value 0 is reserved permanently for no compression

Reference(s)

TS 25.323 clause 5.

TS 25.323 clause 5.1.1.

7.3.2.1.1.3 Test purpose

The test case consists of two test procedures:

The first test procedure verifies, that the ”PDCP Data” PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers. The second test procedure verifies, that the ”PDCP No header” PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers.

1. To verify, that the UE transmits and receives in acknowledged mode (RLC AM) TCP/IP and UDP/IP data packets without IP header compression as configured by higher layers.

2. To verify, that PID assignment rules are correctly applied, if usage of ”PDCP Data” PDU are negotiated, i.e. the UE shall recognize PID value = 0 for a received TCP/IP and UDP/IP data packet and it shall use PID=0 to transmit IP data packets, if no IP header compression is negotiated. If usage of ”PDCP No Header” PDU is negotiated, no PID assignment is used for transmitting and receiving TCP/IP and UDP/IP data packets.

7.3.2.1.1.4 Method of test

Initial conditions

UE is in ~~I~~idle mode.

Test procedure 1: Usage of ”PDCP Data” PDU and no IP header compression is configured

Test procedure 2: No IP header compression is configured

Related ICS/IXIT Statement(s)

Support of PS – Yes/No

PIXIT: Test_PDCP_TCP/IP_Packet1

PIXIT: Test_PDCP_UDP/IP_Packet1

1. Test procedure: Transmission of uncompressed IP header packets using PDCP Data PDU

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile terminated PS switched sessions. Usage of ”PDCP Data” PDU has been configured by higher layers.

b) The SS sends a TCP/IP data packet with uncompressed IP Header.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP Data PDU.

d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.

e) Step b) to d) shall be repeated by using a UDP/IP data packet with uncompressed IP Header.

The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression (PDCP Data PDU). The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction		Message	Comments
	UE	SS		
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data
3	←		PDCP Data	The SS creates a UDP/IP packet without IP header compression (PDCP Data PDU). The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS decodes the received data
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup - RB identity	 20
- PDCP info - Support of lossless SRNS relocation	 False (IE “ Support of lossless SRNS relocation ” only present, if RLC ”In-sequence delivery” is TRUE and in AM)
- PDCP PDU header	present
- RLC info - Downlink RLC mode	 (AM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

2. Test procedure: Transmission of uncompressed IP header packets using No Header PDU

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile terminated PS switched sessions. Usage of ”PDCP No Header” PDU has been configured by higher layers.

b) The SS sends a TCP/IP data packet with uncompressed IP Header.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP No Header PDU.

d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.

e) Step b) to d) shall be repeated by using a UDP/IP data packet with uncompressed IP Header.

f) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1	←		PDCP No Header	The SS creates a TCP/IP packet without IP header compression (PDCP No Header PDU). The SS sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: data: below described TCP/IP packet After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the TCP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP No Header	The UE sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data
				The SS creates a UDP/IP packet without IP header compression (PDCP No Header PDU).

Step	Direction		Message	Comments
	UE	SS		
3	←		PDCP No Header	The SS sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: data: below described UDP/IP packet After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the UDP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→		PDCP No Header	The UE sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS decodes the received data
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108) PS domain 20

- CN domain identity
- RB information to setup
  - RB identity
  - PDCP info
  - Support of lossless SRNS relocation
 	
  - PDCP PDU header
  - RLC info
  - Downlink RLC mode
	
	False
	(IE " Support of lossless SRNS relocation " only present, if RLC "In-sequence delivery" is TRUE and in AM)
	absent
	
	(AM RLC)

Content of PDCP No Header PDU (Step 1)

Information Element	Value/remark
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP No Header PDU (Step 3)

Information Element	Value/remark
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.1.1.5 Test requirements

1. Test requirements: Transmission of uncompressed IP header packets using PDCP Data PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled correctly (PDCP Data PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

2. Test requirements: Transmission of uncompressed IP header packets using PDCP No Header PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled correctly (PDCP No Header PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.1.2 Transmission of compressed Header

7.3.2.1.2.1 Definition and applicability

Applicable for all UEs supporting RLC AM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression protocol RFC 2507.

7.3.2.1.2.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

- PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

Reference(s)

TS 25.323 clause 5

TS 25.323 clause 5.1.1.

7.3.2.1.2.3 Test purpose

1. To verify, that the UE transmits and receives in acknowledged mode (RLC AM) TCP/IP and UDP/IP data packets by using IP header compression protocol as described in RFC2507 as configured by higher layers.

2. To verify, that the PID assignment rules are correctly applied by the UE. The UE as shall use the correct PID value for the applied optimisation method for transmitting and receiving TCP/IP and UDP/IP data packets.

7.3.2.1.2.4 Method of test

Initial conditions

UE is in Idle mode. Usage of ”PDCP Data” PDU and IP header compression is configured

Related ICS/IXIT Statement(s)

Support of IP header compression protocol RFC 2507 - YES/NO

Support of PS – Yes/No

PIXIT: Test_PDCP_TCP/IP_Packet1

PIXIT: Test_PDCP_TCP/IP_Packet2

PIXIT: Test_PDCP_UDP/IP_Packet1

PIXIT: Test_PDCP_UDP/IP_Packet2

Test procedure

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile terminated PS switched sessions. Usage of ”PDCP Data” PDU has been configured by higher layers.

b) The SS sends a ”normal” TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS sends a TCP/IP data packet with packet type: Full_Header, PID=1.

NOTE: According to the compression protocol RFC 2507, this is necessary to transmit the created CONTEXT and the assigned CID.

f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

g) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

h) The SS sends a TCP/IP data packet with packet type: Compressed_TCP, PID=2.

i) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

j) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

k) Step b) to d) is repeated for a ”normal” UDP/IP data packet, PID=0.

l) Step e) to g) is repeated for a UDP/IP data packet with packet type: Full_Header, PID=1.

m) The SS sends a UDP/IP data packet with packet type: Compressed_non_TCP, PID=4.

n) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

o) The SS receives and decodes the UDP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

p) The SS deactivates the UE tests loop mode 1 and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression. The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 1 applied for this TCP/IP data packet and decompresses it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction		Message	Comments
	UE	SS		
4	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
5	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 2 (Compressed_TCP packet type) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 2 applied for this TCP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
6	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 () data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
7	←		PDCP Data	The SS creates a UDP/IP packet without compressed IP header compression. The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction		Message	Comments
	UE	SS		
8	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.

Step	Direction		Message	Comments
	UE	SS		
9	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
10	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
11	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 4 (Compressed _non-TCP packet type) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 4 applied for this UDP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
12	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108) PS domain 20
- CN domain identity - RB information to setup - RB identity - PDCP info - Support of lossless SRNS relocation	 False (IE “ Support of lossless SRNS relocation ” only present, if RLC ”In-sequence delivery” is TRUE and in AM) present 1
- PDCP PDU header - Header compression information CHOICE *algorithm type* - RFC2507 - F_MAX_PERIOD - F_MAX_TIME - MAX_HEADER - TCP_SPACE - NON_TCP_SPACE - EXPECT_REORDERING	 256 (Default) 5 (Default) 168 (Default) 15 (Default) 15 (Default) reordering expected (Default) (AM RLC)
- RLC info - Downlink RLC mode	

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 5)

Information Element	Value/remark
PDU type PID Data	000 00010 (Compressed_TCP, PID = 2) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 9)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 11)

Information Element	Value/remark
PDU type PID Data	000 00100 (Compressed_non-TCP, PID = 4) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.1.2.5 Test requirements

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled with the correct compression protocol. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.2 UE in RLC UM

7.3.2.2.1 Transmission of uncompressed Header

7.3.2.2.1.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with TCP/IP and UDP/IP data packets with uncompressed IP header.

7.3.2.2.1.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

- PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

- PID value 0 is reserved permanently for no compression

Reference(s)

TS 25.323 clause 5

TS 25.323 clause 5.1.1.

7.3.2.2.1.3 Test purpose

The test case consists of two test procedures:

The first test procedure verifies, that the ”PDCP Data” PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers. The second test procedure verifies, that the ”PDCP No header” PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers.

1. To verify, that the UE transmits and receives in unacknowledged mode (RLC UM) TCP/IP and UDP/IP data packets without IP header compression as configured by higher layers.

2. To verify, that PID assignment rules are correctly applied, if usage of ”PDCP Data” PDU are negotiated, i.e. the UE shall recognize PID value = 0 for a received TCP/IP and UDP/IP data packet and it shall use PID=0 to transmit IP data packets, if no IP header compression is negotiated. If usage of ”PDCP No Header” PDU is negotiated, no PID assignment is used for transmitting and receiving TCP/IP and UDP/IP data packets.

7.3.2.2.1.4 Method of test

Initial conditions

UE is in Idle mode.

Test procedure 1: Usage of ”PDCP Data” PDU and no IP header compression is configured

Test procedure 2: no IP header compression is configured

Related ICS/IXIT Statement(s)

Support of PS – Yes/No

PIXIT: Test_PDCP_TCP/IP_Packet1

PIXIT: Test_PDCP_UDP/IP_Packet1

1. Test procedure: Transmission of uncompressed IP header packets using PDCP Data PDU

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of ”PDCP Data” PDU has been configured by higher layers.

b) The SS sends a TCP/IP data packet with uncompressed IP Header.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP Data PDU.

d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.

e) Step b) to d) shall be repeated by using a UDP/IP data packet with uncompressed IP Header.

The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression (PDCP Data PDU). The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data
				The SS creates a UDP/IP packet without IP header compression (PDCP Data PDU).

Step	Direction		Message	Comments
	UE	SS		
3	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS decodes the received data
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity - CN domain identity - RB information to setup - RB identity - PDCP info - PDCP PDU header - RLC info - Downlink RLC mode	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108) PS domain 21 present (UM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

2. Test procedure: Transmission of uncompressed IP header packets using No Header PDU

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of ”PDCP No Header” PDU has been configured by higher layers.

b) The SS sends a TCP/IP data packet with uncompressed IP Header.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP No Header PDU.

d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.

e) Step b) to d) shall be repeated by using a UDP/IP data packet with uncompressed IP Header.

f) The SS deactivates the Loop back test mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP No Header	The SS creates a TCP/IP packet without IP header compression (PDCP No Header PDU). The SS sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: data: below described TCP/IP packet After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the TCP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP No Header	The UE sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data
				The SS creates a UDP/IP packet without IP header compression (PDCP No Header PDU).

Step	Direction		Message	Comments
	UE	SS		
3	←		PDCP No Header	The SS sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: data: below described UDP/IP packet After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the UDP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→		PDCP No Header	The UE sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS decodes the received data
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup - RB identity	 21
- PDCP info	False
- PDCP PDU header	absent
- RLC info - Downlink RLC mode	 (UM RLC)

Content of PDCP No Header PDU (Step 1)

Information Element	Value/remark
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP No Header PDU (Step 3)

Information Element	Value/remark
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.1.5 Test requirements

1. Test requirements: Transmission of uncompressed IP header packets using PDCP Data PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled correctly (PDCP Data PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

2. Test requirements: Transmission of uncompressed IP header packets using PDCP No Header PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled correctly (PDCP No Header PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.2.2 Transmission of compressed Header

7.3.2.2.2.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression protocol RFC 2507.

7.3.2.2.2.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

- PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

Reference(s)

TS 25.323 clause 5.

TS 25.323 clause 5.1.1.

7.3.2.2.2.3 Test purpose

1. To verify, that the UE transmits and receives in unacknowledged mode (RLC UM) TCP/IP and UDP/IP data packets by using IP header compression protocol as described in RFC2507 as configured by higher layers.
2. To verify, that the PID assignment rules are correctly applied by the UE. The UE as shall use the correct PID value for the applied optimisation method for transmitting and receiving TCP/IP and UDP/IP data packets.

7.3.2.2.2.4 Method of test

Initial conditions

UE is in Idle mode. Usage of ”PDCP Data” PDU and no IP header compression is configured

Related ICS/IXIT Statement(s)

Support of IP header compression ~~method~~protocol RFC 2507 - YES/NO~~.~~

Support of PS – Yes/No

PIXIT: Test_PDCP_TCP/IP_Packet1

PIXIT: Test_PDCP_TCP/IP_Packet2

PIXIT: Test_PDCP_UDP/IP_Packet1

PIXIT: Test_PDCP_UDP/IP_Packet2

Test procedure

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of ”PDCP Data” PDU has been configured by higher layers.

b) The SS sends a ”normal” TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS sends a TCP/IP data packet with packet type: Full_Header, PID=1.

NOTE: According to the compression protocol RFC 2507, this is necessary to transmit the created CONTEXT and the assigned CID.

f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

g) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

h) The SS sends a TCP/IP data packet with packet type: Compressed_TCP, PID=2.

i) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

j) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

k) Step b) to d) is repeated for a ”normal” UDP/IP data packet, PID=0.

l) Step e) to g) is repeated for a UDP/IP data packet with packet type: Full_Header, PID=1.

m) The SS sends a UDP/IP data packet with packet type: Compressed_non_TCP, PID=4.

n) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

o) The SS receives and decodes the UDP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

p) The SS deactivates the UE test loop test mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression. The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 1 applied for this TCP/IP data packet and decompresses it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.

Step	Direction		Message	Comments
	UE	SS		
				The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
5	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 2 (Compressed_TCP packet type) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 2 applied for this TCP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
6	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
				The SS creates a UDP/IP packet without compressed IP header compression.
7	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.

Step	Direction		Message	Comments
	UE	SS		
				The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
8	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
9	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
10	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: below described UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
11	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 4 (Compressed _non-TCP packet type) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.

Step	Direction		Message	Comments
	UE	SS		
				The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
12	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: previously received UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble " Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup - RB identity	 21
- PDCP info	False
- PDCP PDU header	present
- Header compression information	1
CHOICE *algorithm type*	
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering expected (Default)
- RLC info - Downlink RLC mode	 (UM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 5)

Information Element	Value/remark
PDU type PID Data	000 00010 (Compressed_TCP, PID = 2) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 9)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 11)

Information Element	Value/remark
PDU type PID Data	000 00100 (Compressed_non-TCP, PID = 4) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.2.5 Test requirements

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled with the correct compression method. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.2.3 Extension of used compression methods

7.3.2.2.3.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression protocol: RFC 2507.

7.3.2.2.3.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

- PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

The PDCP layer shall be able to support several header compression protocols and it shall always be possible to extend the list of supported protocols in the future.

The table (PID value allocation table) is reconfigured every time the PDCP entity is reconfigured, with a change in the supported header compression protocols.

The assignment of the PID values follow the general rules listed below:

- PID values are reassigned for the PDCP entity after renegotiation of the header compression protocols;
- the list of negotiated (or re-negotiated) header compression entities shall be examined, starting from the first one in the list. The number of PID values to be assigned is specified in the clause for this protocol.

Reference(s)

TS 25.323 clause 5

TS 25.323 clause 5.1.1

TS 25.323 clause 5.1

7.3.2.2.3.3 Test purpose

1. To verify, that the UE is able to handle an extended PID value allocation table after PDCP reconfiguration as configured by RRC.

7.3.2.2.3.4 Method of test

Initial conditions

UE is in Idle mode. Usage of ”PDCP Data” PDU and no IP header compression is configured

Related ICS/IXIT Statement(s)

Support of IP header compression ~~method~~protocol RFC 2507 - YES/NO~~.~~

Support of PS – Yes/No

PIXIT: Test_PDCP_TCP/IP_Packet1

PIXIT: Test_PDCP_TCP/IP_Packet2

Test procedure

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions (with the UE test loop mode 1). Usage of ”PDCP Data PDU” and no optimisation method has been configured by higher layers.

b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS reconfigures (using RRC Radio Bearer Reconfiguration message) the PDCP entity by extending the PID value allocation table and therefore the applied optimisation method with the IP header compression protocol RFC 2507. The UE test loop mode 1 in RLC UM is still active.

f) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

g) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

h) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

i) The SS sends a TCP/IP data packet with packet type: Full_Header, PID=1.

j) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

k) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

l) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
				The SS creates a TCP/IP packet without IP header compression.
1	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3	←		RRC RADIO BEARER RECONFIGURATION	SS extends the ”PID value allocation table” with IP header compression PID (RFC 2507) in the UE.
4	→		RRC RADIO BEARER RECONFIGURATION COMPLETE	UE acknowledges the new settings
5	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (normal packet type [TCP/IP]) data: below described TCP/IP packet. After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction		Message	Comments
	UE	SS		
6	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
7	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this TCP/IP data packet and shall decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
8	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC RADIO BEARER RECONFIGURATION message

The contents of the RRC RADIO BEARER RECONFIGURATION message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list RB information to reconfigure - PDCP info - PDCP PDU header - Header compression information CHOICE *algorithm type* - RFC2507 - F_MAX_PERIOD - F_MAX_TIME - MAX_HEADER - TCP_SPACE - NON_TCP_SPACE - EXPECT_REORDERING	1 present 1 256 (Default) 5 (Default) 168 (Default) 15 (Default) 15 (Default) reordering expected (Default)

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup - RB identity	 21
- PDCP info - PDCP PDU header	 present
- RLC info - Downlink RLC mode	 (UM RLC)

Content of PDCP Data PDU (Step 1 and 5)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.3.5 Test requirements

After PDCP reconfiguration, the UE shall return the TCP/IP data packets as indication, that the extension of used optimisation method are applied by UE. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.2.4 Compression type used for different entities

7.3.2.2.4.1 Definition and applicability

Applicable only for an UE supporting the establishment of more than one PDCP entity in parallel, i.e. it shall be possible to configure more than one Radio Bearer Loop Back entities (each PDCP entity are assigned via PDCP-SAP to its own Radio Bearer Loop Back entity).

Applicable for all UEs supporting twoRLC UM and a Radio Bearers in RLC UM and RLC AM as described in this test case, clause 7.3.2.2.4.6 Combined PDCP Acknowledged and Unacknowledged mode configurationConfiguration of PS Cell PDCP AM UM RAB.e Test procedure.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore it shall apply IP header compression protocol RFC 2507.

7.3.2.2.4.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

- PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

The assignment of the PID values follow the general rules listed below:

- PID values are assigned independently to each PDCP entity;

Different PDCP entities may include header compression protocols of the same type

Reference(s)

TS 25.323 clause 5

TS 25.323 clause 5.1.1

TS 25.323 clause 5.1

7.3.2.2.4.3 Test purpose

NOTE: For this test case, the SS shall be configured to handle more than one received PDCP messages.

1. To verify, that a configured IP header compression protocol are applied to compress and decompress TCP/IP data packets by several PDCP entities in parallel, if more than one entities are established, i.e. the UE uses the same PID to transmit two TCP/IP data packets with the same content in parallel using two Radio Bearer configurations.

7.3.2.2.4.4 Method of test

Initial conditionsUE is in Idle mode. Usage of ”PDCP Data” PDU and IP header compression is configured for both PDCP entities.

Related ICS/IXIT Statement(s)

Establishment of more than one PDCP entities - YES/NO

Support of IP header compression ~~method~~protocol RFC 2507 - YES/NO~~.~~

Support of UM RB and AM RB

Support of PS – Yes/No

IXIT: Test_PDCP_TCP/IP_Packet1

IXIT: Test_PDCP_TCP/IP_Packet2

Test procedure

a) The SS setups a packet switched session including two radio bearer configurations in parallel in UE test loop mode 1 and in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of IP header compression protocol RFC 2507 has been configured by higher layers.

b) The SS sends two successive a ”normal” TCP/IP data packet, PID=0 via both PDCP configurations to their peer entities.

c) After having received the TCP/IP data packets, the PDCP entities of the UE shall recognize the PID value and shall handle the received data packet independent of the used PID with the correct decompression method. Then they forward the data to their Radio Bearer Loop Back entity. Both received data shall be returned by each Radio Bearer Loop Back entity.

d) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

e) After having received the TCP/IP data packets, the PDCP entities of the UE shall recognize the PID value and shall handle the received data packets independent of the used PID with the correct decompression method. Then they forward the data to their Radio Bearer Loop Back entity. Both received data shall be returned by each Radio Bearer Loop Back entity.

f) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

g) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS sends two successive a PDCP Data PDU using the RLC-UM-Data-Request Primitive via both PDCP entities with the following contents to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received both PDCP Data PDUs, the UE decodes each PDU and recognizes PID value = 0 (no IP header compression applied for both TCP/IP data packets). Although the same PID is used for both PDUs, the UE shall handle they with the correct method and it forwards both data packets via PDCP-SAPs to their Radio Bearer Loop Back (RB LB) entities. The RB LB entities in UE test loop mode 1 return the received data packets and send they back to their PDCP entities.

Step	Direction		Message	Comments
	UE	SS		
2	→		PDCP Data	The UE sends back for each PDCP configuration a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of TCP/IP data packets, the SS applies the appropriate decoding function for both received messages depending on which PID was assigned to the received data
3	←		PDCP Data	The SS sends two successive a PDCP Data PDU using the RLC-UM-Data-Request Primitive via both PDCP entities with the following contents to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet After having received both PDCP Data PDUs, the UE decodes each PDU and recognizes PID value = 1 (Full_Header packet type applied for both TCP/IP data packets). Although the same PID is used for both PDUs, the UE shall handle they with the correct method and it forwards both data packets via PDCP-SAPs to their Radio Bearer Loop Back (RB LB) entities. The RB LB entities in UE test loop mode 1 return the received data packets and send they back to their PDCP entities.
4	→		PDCP Data	The UE sends back for each PDCP configuration a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 data: previously received TCP/IP packet After reception of TCP/IP data packets, the SS applies the appropriate decoding function for both received messages depending on which PID was assigned to the received data
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble " Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC configuration for UM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup - RB identity	 20
- PDCP info - PDCP PDU header	 present
- Header compression information CHOICE *algorithm type*	1
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering expected (Default)
- RLC info - Downlink RLC mode	 (AM RLC)
- RB information to setup	(NOTE: for RB ID 21, the same RAB configurations are used (No. # 23 as described in TS 34.108) as described for RB ID 20)
- RB identity	21
- PDCP info - PDCP PDU header	 present
- Header compression information CHOICE *algorithm type*	1
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering expected (Default)
- RLC info - Downlink RLC mode	 (UM RLC)

Content of both PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of both PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.4.5 Test requirements

The UE shall return both TCP/IP data packets as indication that the previous received data packets associated with the same PID value are handled in parallel with the same decompression protocol. This verifies, that more than one PDCP configuration on UE side using the same compression protocol is able to apply it in parallel.

7.3.2.2.4.6 Combined PDCP Acknowledged and Unacknowledged mode configuration~~Configuration of PS Cell_PDCP_AM_UM_RAB~~

~~The configuration is based on 34.108, 6.10.2.4.1.26. The RB0/UM-CCCH is referred to 34.108, 6.10.2.4.3.2.1.2 and RB0/TM-CCCH is referred to 34.108, 6.10.2.4.4.1.1.1. The configuration is applied to PDCP test cases using both the acknowledged and unacknowledged mode.~~

This configuration is based on the interactive or background / UL:64 DL 64 kbps / PS RAB. The SRB configurations are UL:3.4 DL:3.4 kbps for DCCH aligned to this combined RABs are described for SRB DL 3.4 kbps in TS 34.108, clause 6.10.2.4.1.2.2 and for SRB DL 3.4 kbps in TS 34.108, clause 6.10.2.4.1.2.1. The TFCS refer to TS34.108, clause 6.10.2.4.1.24.1.1.3 for UL and clause 6.10.2.4.1.25.2.1.3 for DL, the Physical channel parameters refer to TS 34.108, clause 6.10.2.4.1.24.1.2 for UL clause 6.10.2.4.1.25.2.2 and for DL accordingly. The configuration is applied to PDCP test cases using both the acknowledged and unacknowledged mode.

Table 7.3.2.2.4/1 Uplink Transport channel parameter for combined RABs PS AM_UM

Higher layer	RAB/Signalling RB		**RAB #20**	**RAB #21**
RLC	Logical channel type		DTCH	DTCH
	RLC mode		AM	UM
	Payload sizes, bit		316	324
	Max data rate, bps		63200	64800
	TrD PDU header, bit		16	8
MAC	MAC header, bit		4	
	MAC multiplexing		2 logical channel multiplexing	
Layer 1	TrCH type		DCH	
	TB sizes, bit		336	
	TFS	TF0, bits	0x336	
		TF1, bits	1x336	

		TF2, bits	2x336
		TF3, bits	3x336
		TF4, bits	4x336
	TTI, ms		20
	Coding type		TC
	CRC, bit		16
	Max number of bits/TTI after channel coding		4236
	Uplink: Max number of bits/radio frame before rate matching		2118
	RM attribute		130-170

Table 7.3.2.2.4/2 Downlink Transport channel parameter for combined RABs PS AM_UM

Higher layer	RAB/Signalling RB		**RAB #20**	**RAB #21**
RLC	Logical channel type		DTCH	DTCH
	RLC mode		AM	UM
	Payload sizes, bit		316	324
	Max data rate, bps		63200	64800
	TrD PDU header, bit		16	8
MAC	MAC header, bit		4	
	MAC multiplexing		2 logical channel multiplexing	
Layer 1	TrCH type		DCH	
	TB sizes, bit		336	
	TFS	TF0, bits	0x336	
		TF1, bits	1x336	
		TF2, bits	2x336	
		TF3, bits	3x336	
		TF4, bits	4x336	
	TTI, ms		20	
	Coding type		TC	
	CRC, bit		16	
	Max number of bits/TTI after channel coding		4236	
	RM attribute		130-170	

~~**RB Identity**~~	~~tsc_RB20 (20)~~	~~tsc_RB21 (21)~~	~~tsc_RB1 (1)~~	~~tsc_RB2 (2)~~	~~tsc_RB3 (3)~~	~~tsc_RB4 (4)~~	~~tsc_RB0 (0)~~
~~**LogCh Type**~~	~~DTCH~~	~~DTCH~~	~~DCCH~~	~~DCCH~~	~~DCCH~~	~~DCCH~~	~~CCCH~~
~~**LogCh Identity**~~	~~tsc_UL_DTCH1 (7)~~	~~tsc_UL_DTCH2 (8)~~	~~tsc_UL_DCCH1 (1)~~	~~tsc_UL_DCCH2 (2)~~	~~tsc_UL_DCCH3 (3)~~	~~tsc_UL_DCCH4 (4)~~	~~tsc_UL_CCCH5 (5)~~
~~**RLC mode**~~	~~AM~~	~~UM~~	~~UM~~	~~AM~~	~~AM~~	~~AM~~	~~TM~~
~~**TrCH Type**~~	~~DCH~~		~~DCH~~				~~RACH~~
~~**TrCH identity**~~	~~tsc_UL_DCH1 (1)~~		~~tsc_UL_DCH5 (5)~~				~~tsc_RACH1 (15)~~
~~**PhyCh Type**~~	~~DPDCH~~						~~PRACH~~
~~**PhyCH identity**~~	~~tsc_UL_DPCH1 (20)~~						~~tsc_PRACH1 (8)~~

Table 2: Downlink configuration of PS Cell_PDCP_AM_UM_RAB

RB Identity	tsc_RB20 (20)	tsc_RB21 (21)	tsc_RB1 (1)	tsc_RB2 (2)	tsc_RB3 (3)	tsc_RB4 (4)	tsc_RB0 (0)	tsc_RB_PCCH (-2)
LogCh Type	DTCH	DTCH	DCCH	DCCH	DCCH	DCCH	CCCH	PCCH
LogCh Identity	tsc_DL_DTCH1 (7)	tsc_DL_DTCH2 (8)	tsc_DL_DCCH1 (1)	tsc_DL_DCCH2 (2)	tsc_DL_DCCH3 (3)	tsc_DL_DCCH4 (4)	tsc_DL_CCCH5 (5)	tsc_PCCH1 (1)
RLC mode	AM	UM	UM	AM	AM	AM	UM	TM
MAC priority	1	1	1	2	3	4	1	1
TrCH Type	DCH		DCH				FACH	PCH
TrCH identity	tsc_DL_DCH1 (6)		tsc_DL_DCH5 (10)				tsc_FACH2 (14)	tsc_PCH1 (12)
PhyCh Type	DPCH						Secondary CCPCH	
PhyCH identity	tsc_DL_DPCH1 (20)						tsc_S_CCPCH1 (5)	

7.3.2.2.5 Reception of not defined PID values

7.3.2.2.5.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore to establish a PDCP entity, which applies PDCP Data PDU if no IP header compression protocol, is negotiated.

The UE shall not forward invalid PDCP PDU data contents to its Radio Bearer.

7.3.2.2.5.2 Conformance requirement

PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol;

PID values that are used and are not defined invalidate the PDCP PDU;

Reference(s)

TS 25.323 clause 5.1.1

TS 25.323 clause 5.1.2.1

7.3.2.2.5.3 Test purpose

1. To verify, that a UE considers a received PDCP PDU message with not defined PID value as invalid, i.e. such an invalid PDCP PDU is not forwarded to the Radio Bearer entity on UE side. Therefore the UE using test loop mode 1 does not return such data packet to the SS.

7.3.2.2.5.4 Method of test

Initial conditions

UE is in Idle mode. Usage of ”PDCP Data” PDU and no IP header compression is configured.

Related ICS/IXIT Statement(s)

Support of IP header compression protocol RFC 2507 - YES/NO

Support of PS – Yes/No

IXIT: Test_PDCP_TCP/IP_Packet1

IXIT: Test_PDCP_TCP/IP_Packet2

Test procedure

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of ”PDCP Data PDU” and no PDCP IP header compression protocol has been configured by higher layers.

b) The SS sends a ”normal” TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decoding method. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

e) The SS sends a TCP/IP data packet with packet type: Full_Header, PID=1.

f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decoding method.

g) The SS waits an amount of time to make sure, that no returned data packet was sent by UE.

h) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet. After having received the PDCP Data PDU, the UE shall recognize, that a not defined PID value (as configured by higher layers) is inserted in the PDCP PDU. The UE shall consider this PDU as invalid, i.e. the data packet is not forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. Therefore this data packet is not returned to the SS.
4				The SS waits a amount of time to make sure, that the previously sent data packet is not returned to the SS.
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup - RB identity	 21
- PDCP info - PDCP PDU header	 present
- RLC info - Downlink RLC mode	 (UM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.5.5 Test requirements

The UE shall return the received TCP/IP data packet using the PDCP Data PDU with PID = 0 as indication, that the UE works as configured.

The UE shall not return the TCP/IP data packet using the PDCP Data PDU with PID = 1 as indication, that this PDU was considered as invalid by the UE. This verifies, that the PDCP configuration on UE side has considered this PDU as invalid.

7.3.3 PDCP sequence numbering when lossless SRNS Relocation

7.3.3.1 Data transmission if lossless SRNS Relocation is supported

7.3.3.1.1 Definition and applicability

Applicable for all UEs supporting RLC AM, RLC in-sequence delivery, a Radio Bearer as described in the Common Test Sequences and lossless SRNS relocation.

The UE shall be capable to deal with uncompressed TCP/IP data packets and furthermore to establish a PDCP entity which applies PDCP Sequence Numbering

7.3.3.1.2 Conformance requirement

The PDCP layer shall carry out the following functions during lossless SRNS relocation:

- support PDCP sequence numbering as specified in clause 5.4.1.

The PDCP layer shall carry out the following during lossless SRNS relocation:

- provide unconfirmed PDCP SDUs and sequence numbers for forwarding to the target RNC.

Reference(s)

TS 25.323 clause 5.4

7.3.3.1.3 Test purpose

1. To verify, that a UE supporting lossless SRNS relocation is able to receive and to send IP data packets by using PDCP Sequence Numbering as configured by higher layers.

7.3.3.1.4 Method of test

Initial conditions

SS: 2 cells - Cell A belonging to the valid SRNS (Source SRNS), Cell B belonging to the DRNS (Target SRNS). Both cells are neighbour cells. Cell A has a higher RF power level than Cell B such that an UE shall find Cell A more suitable for service.

UE: It is in Idle mode and has selected cell A with valid SRNS (Source SRNS). Usage of "PDCP Data" PDU and no IP header compression is configured

Related ICS/IXIT Statement(s)

Support of lossless SRNS Relocation - YES/NO~~.~~

Support of ~~RLC in-sequence delivery - YES/NO.~~PS – Yes/No

IXIT: Test_PDCP_TCP/IP_Packet1

IXIT: Test_PDCP_TCP/IP_Packet2

Test procedure

a) The SS setups a packet switched session including Radio Bearer and UE test loop mode 1 in RLC AM and in-sequence delivery using Common test procedures for mobile terminated PS switched sessions in Cell A. Usage of ”PDCP Data” PDU, support of lossless SRNS relocation and no IP header compression has been configured by higher layers. The PDCP SN window size has been negotiated by RRC.

b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS starts to broadcast BCCH messages on the primary CPICH in cell B with a power level higher than in cell A. The UE shall chose cell B to be more suitable for service and hence perform a cell reselection.

f) After completion of cell reselection, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH of cell B with the Cell update cause ”Cell Reselection”.

g) After having performed SRNS relocation (target RNC allocated with new S-RNTI for the UE), the Target SRNS is the valid SRNS and the SS sends a ”CELL UPDATE CONFIRM” message with new RNC_ID to indicate the completion of the cell update.

h) The UE shall confirm the reallocation.

i) The SS sends the next TCP/IP data packet (no compression packet type), PID=0 using the ”PDCP Data” PDU to the UE.

j) After having received the TCP/IP data packet, the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

k) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

l) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1) in Cell A				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression. The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3				The SS increases the RF power level of cell B and decreases the power level of Cell A such that the UE finds cell B more suitable for service.
4				The UE cell reselection is performed and Cell B are selected for service.
5	→		RRC CELL UPDATE	Then, the UE shall inform the SS about the new cell selection by sending cell update with new parameters (parameter values as used in RRC testing).

Step	Direction		Message	Comments
	UE	SS		
6	←		RRC CELL UPDATE CONFIRM	After having performed SRNS relocation, the Target SRNS is the valid SRNS and the SS sends a ”CELL UPDATE CONFIRM” message with new parameter ”RNC_ID” to indicate the completion of SRNS relocation (parameters as used in RRC testing).
7	→		RNTI REALLOCATION COMPLETE	The UE confirms the newly received information (parameters as used in RRC testing).
8	←		PDCP Data	The SS sends the next PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
9	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup - RB identity	 20
- PDCP info - Max PDCP SN window size - Support of lossless SRNS relocation - PDCP PDU header	 65535 TRUE present
- RLC info - Downlink RLC mode - In-sequence delivery	 (AM RLC) True

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 8)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.3.1.5 Test requirements

After having sent the ”RRC RNTI REALLOCATION COMPLETE”, the UE shall return the received TCP/IP data packets as indication, that it supports lossless SRNS relocation. This implicitly verifies, that Sequence Numbering is used for lossless SRNS relocation.

7.3.3.2 Synchronisation of PDCP sequence numbers

7.3.3.2.1 Definition and applicability

Applicable for all UEs supporting RLC AM, RLC in-sequence delivery, a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore it shall be capable to use IP Header compression protocol RFC 2507.

7.3.3.2.2 Conformance requirement

The PDCP SeqNum PDU shall be sent by the peer PDCP entities when synchronisation of the PDCP SN is required. (...) Synchronisation of PDCP SN is required after (...) RB reconfiguration.

Reference(s)

TS 25.323 clause 5.4

7.3.3.2.3 Test purpose

1. To verify, that the UE supporting lossless SRNS relocation as configured by higher layers is able to handle the ”PDCP SeqNum” PDU to synchronize the used PDCP Sequence Number after reconfiguration of the Radio Bearer.

7.3.3.2.4 Method of test

Initial conditions

SS: 2 cells - Cell A belonging to the valid SRNS (Source SRNS), Cell B belonging to the DRNS (Target SRNS). Both cells are neighbour cells. Cell A has a higher RF power level than Cell B such that an UE shall find Cell A more suitable for service.

UE: It is in Idle mode and has selected cell A with valid SRNS (Source SRNS). Usage of ”PDCP Data” PDU, “PDCP SeqNum” PDU and no IP header compression is configured

Related ICS/IXIT Statement(s)

Support of lossless SRNS relocation - YES/NO

Support of RLC in-sequence delivery - YES/NO

Test procedure

a) The SS setups a packet switched session including Radio Bearer and UE test loop mode 1 in RLC AM and in-sequence delivery using Common test procedures for mobile terminated PS switched sessions in Cell A. Usage of ”PDCP Data” PDU, support of lossless SRNS relocation and no IP header compression has been configured by higher layers. The PDCP SN window size has been negotiated by RRC.

b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS reconfigures (using RRC Radio Bearer Reconfiguration message) the PDCP entity by extending the PID value allocation table and therefore the applied optimisation method with the IP header compression protocol RFC 2507. The UE test loop mode 1 in RLC AM is still active.

f) The SS sends the next TCP/IP data packet (no compression packet type), PID=0 using the ”PDCP SeqNum” PDU including the current PDCP Sequence Number value to the UE.

g) After having received the TCP/IP data packet, the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

h) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

i) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1) in Cell A				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression. The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: previously received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3	←		RRC RADIO BEARER RECONFIGURATION	SS extends the ”PID value allocation table” with IP header compression PID (RFC 2507) in the UE.
4	→		RRC RADIO BEARER RECONFIGURATION COMPLETE	UE acknowledges its new settings

Step	Direction	Message	Comments
	UE | SS		
5	←	PDCP SeqNum	The SS sends a PDCP SeqNum PDU including its current Sequence Number with the following content to the UE: PDU type = 001 (PDCP SeqNum PDU) PID = 0 (normal packet type [TCP/IP]) SeqNum = current PDCP Sequence Number data: below described TCP/IP packet After having received the PDCP SeqNum PDU, the UE shall set the received PDCP Sequence Number as its own valid value. It decodes the PDU, recognizes PID value = 0 applied for this TCP/IP data packet and shall decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
6	→	PDCP PDU	The UE sends a PDCP PDU with PDCP Header back to the SS. The content is as follows: PDU type = 000 (PDCP Data PDU) PID value = 0 to 3 SeqNum: current UE value, (optional parameter, depending on the used PDU) data: previously received TCP/IP packet. After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)			

Specific Message Contents

RRC RADIO BEARER RECONFIGURATION message

The contents of the RRC RADIO BEARER RECONFIGURATION message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list	1
RB information to reconfigure	
- PDCP info	
- Max PDCP SN window size	65535
- Support of lossless SRNS relocation	TRUE
- PDCP PDU header	present
- Header compression information	1
CHOICE *algorithm type*	
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering expected (Default)

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ”Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ”Setup a UE terminated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC Residual BER as described in TS 24.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup - RB identity - PDCP info	 20
- Max PDCP SN window size - Support of lossless SRNS relocation - PDCP PDU header	65535 TRUE present
- RLC info - Downlink RLC mode - In-sequence delivery	 (AM RLC) True

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP SeqNum PDU (Step 5)

Information Element	Value/remark
PDU type	001
PID	00000 (No header compression, PID = 0)
Sequence number	(16 Bit value) valid Sequence Number of the SS
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.3.2.5 Test requirements

After having received the TCP/IP data packet conveyed with the ”PDCP SeqNum” PDU, the UE shall return the TCP/IP data packets as indication, that the UE is able to handle a Sequence Number synchronisation.

3GPP TSG-T1 Meeting #13
Cancun, Mexico, 29th November – 30th November 2001
Tdoc T1-010407

3GPP TSG-T1 SIG Meeting #20
Cancun, Mexico, 26th November – 28th November 2001
Tdoc T1S-010309

CR-Form-v4

CHANGE REQUEST

⌘ **34.123-1** **CR** **114** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Additional configuration information and corrections for L2/BMC testing
Source:	⌘	CETECOM GmbH
Work item code:	⌘	TEI
Date:	⌘	2001-11-22
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	Correction of L2/BMC testing, 3GPP TS 34.123-1, clause 7.4
Summary of change:	⌘	This CR consists of two parts: 1. Correction of TS 34.123-1, clause 7.4, version 4.0.0 in reference to already agreed CR T1S-010298 (Busan meeting T1S#19): During renaming of T1S-010183 to T1-010298, some revision marks were missing. Due to partially not existing revision marks, some changes are not implemented in TS 34.123-1 v4.0.0. The first part of this CR is to introduce the missing correction of T1S-010183 in TS 34.123-1v4.0.0. 2. Based on part one of this CR, the following corrections have been done (highlighted with yellow color): 2.1 The message flow of test case 7.4.3.1 can be simplified without changing the test coverage: Correction of test case 7.4.3.1, Test procedure and Expected Sequence and Test requirements accordingly: Change: CB-Data2 is deactivated by the beginning of test case 7.4.3.1 and is not longer deactivated while the test is performed. Therefore, after having repeated CB-Data1, CB-Data2 will be sent in the next Block Set to verify, that an UE ignores deactivated CB-Data. With this solution, test step 7,8 and 12 can be saved. 2.2 editorial correction of “PLC” to “RLC” in clause 7.4.1.1
Consequences if not approved:	⌘	BMC tests are not corrected

Clauses affected:	⌘	Clause 7.4 BMC
Other specs	⌘	☐ Other core specifications ⌘

affected:	☐ Test specifications ☐ O&M Specifications	
Other comments:	⌘ Releases affected: R99 and REL-4	

7.4 BMC

General

For BMC testing, the UE manufacturers shall define CB data as PIXIT (CB-Data 1 and 2) for different CB message types and for CB Data41 (ANSI-41 data) and it shall describe how the reception is indicated in a clear way on UE side.

Only Cell Broadcast Services (CBS) as distributed BMC service is applied. For a UE supporting BMC, it is assumed, that there is a BMC entity established, if Initial conditions are reached.

If not otherwise mentioned, the same procedures as used in RRC test specification [TS 34.123-1] are applied to reach Initial conditions for BMC testing.

It shall be possible to activate and deactivate a CB message types by using the Message ID of CB data 1, 2 and CB41 data 1 on UE side.

7.4.1 BMC RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

7.4.1.1 Transport channel parameters of BMC RAB and SRBs for CCCH, SRB for DCCH, and SRB for BCCH

Higher layer	RAB/signalling RB		SRB#1	SRB#2	SRB#3	SRB#4	SRB#5	SRB#6	RAB#30
	User of Radio Bearer		RRC	RRC	RRC	NAS_DT High prio	NAS_DT Low prio	RRC	-
RLC	Logical channel type		CCCH	DCCH	DCCH	DCCH	DCCH	BCCH	CTCH
	RLC mode		UM	UM	AM	AM	AM	TM	UM
	Payload sizes, bit		152	136 or 120*	128	128	128	166	152
	Max data rate, bps		45600	40800 or 36000	38400	38400	38400	49800	45600
	AMD/UMD/TrD PDU header, bit		8	8	16	16	16	0	8
MAC	MAC header, bit		8	24 or 40	24	24	24	2	8
	MAC multiplexing		7 logical channel multiplexing						
Layer 1	TrCH type		FACH						
	TB sizes, bit		168						
	TFS	TF0, bits	0x168						
		TF1, bits	1x168						
		TF2, bits	2x168						
		TF3, bits	3x168						
	TTI, ms		10						
	Coding type		CC 1/2						
	CRC, bit		16						
	Max number of bits/TTI before rate matching		1136						
	RM attribute		200-240						

* MAC header size and ~~P~~RLC payload size depend on use of U-RNTI or C-RNTI.

7.4.1.2 TFCS

TFCS size	4
TFCS	(BMC RAB and SRBs for CCCH/DCCH/BCCH) = TF0, TF1, TF2, TF3

7.4.1.3 Physical channel parameters

SCCPCH	DTX position	Flexible
	Spreading factor	64
	Number of TFCI bits/slot	8
	Number of Pilot bits/slot	0
	Number of data bits/slot	72
	Number of data bits/frame	1080

~~7.4.1~~7.4.2 General BMC message reception

~~7.4.1.1~~7.4.2.1 UE in RRC Idle mode

~~7.4.1.1.1~~7.4.2.1.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on UE side.

~~7.4.1.1.2~~7.4.2.1.2 Conformance requirement

A UE supporting Cell Broadcast Services shall be capable to receive BMC messages in the RRC Idle mode.

Reference(s)

TS 25.324 clause 9.1

~~7.4.1.1.3~~7.4.2.1.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Idle mode.

~~7.4.1.1.4~~7.4.2.1.4 Method of test

Initial conditions

UE is in RRC Idle mode; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

Support of BMC – Yes/No

Support of PS – Yes/No

ICS: CBS message support - YES/No

IXIT: CBS-Data 1: Octetstring of N (where N≥1 and less than 1246)

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS traffic information)

Test procedure

a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive CBS messages.

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE; this shall be repeated for "CPREP" times (indicated by parameter "repetition period")

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

Specific Message Contents

SYSTEM INFORMATION TYPE 5 AND 6

The contents of SYSTEM INFORMATION TYPE 5 AND 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode - CTCH allocation period - CTCH frame offset Secondary CCPCH system - Secondary CCPCH information - TFCS - FACH/PCH information - TFS - CTCH indicator	(see RRC default test settings) N K 1 (see RRC default test settings) 1 (see RRC default test settings) TRUE

BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number - Geographic Scope Indicator (2 bit) - Message Code (10 bit) - Update Number (4 bit)	[see TS 23.041] 11 (Normal Cell wide) in accordance with the Message ID for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 1]

~~7.4.1.1.5~~7.4.2.1.5 Test requirements

The UE shall store and decode a received activated CBS message.

~~7.4.1.2~~7.4.2.2 UE in RRC Connected mode, state CELL_PCH

~~7.4.1.2.1~~7.4.2.2.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on UE side.

~~7.4.1.2.2~~7.4.2.2.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL_PCH RRC-state of Connected mode.

Reference(s)

TS 25.324 clause 9.1

~~7.4.1.2.3~~7.4.2.2.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Connected mode, state CELL_PCH.

~~7.4.1.2.4~~7.4.2.2.4 Method of test

Initial conditions

UE is in Connected mode state CELL_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS message support - YES/No

IXIT: CBS-Data 1: Octetstring of N (where N≥1 and less than 1246)

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS traffic information)

Test procedure

a) The UE in RRC CELL_PCH is triggered to wait for the next system information. The UE is activated to receive CBS messages,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE; this shall be repeated for ”CPREP” times (indicated by parameter ”repetition period”)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated ”CPREP” times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

Specific Message Contents

SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode - CTCH allocation period - CTCH frame offset Secondary CCPCH system - Secondary CCPCH information - TFCS - FACH/PCH information - TFS - CTCH indicator	(see RRC default test settings) N K 1 (see RRC default test settings) 1 (see RRC default test settings) TRUE (see RRC default test settings)

BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number - Geographic Scope Indicator (2 bit) - Message Code (10 bit) - Update Number (4 bit)	[see TS 23.041] 11 (Normal Cell wide) in accordance with the Message ID for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 1]

~~7.4.1.2.5~~7.4.2.2.5 Test requirements

The UE shall store and decode a received activated CBS message.

~~7.4.1.3~~7.4.2.3 UE in RRC Connected mode, state URA_PCH

~~7.4.1.3.1~~7.4.2.3.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on UE side.

~~7.4.1.3.2~~7.4.2.3.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL_PCH and URA_PCH RRC-state of Connected mode.

Reference(s)

TS 25.324 clause 9.1.

~~7.4.1.3.3~~7.4.2.3.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Connected mode, state URA_PCH.

~~7.4.1.3.4~~7.4.2.3.4 Method of test

Initial conditions

UE is in Connected mode state URA_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS message support - YES/No

IXIT: CBS-Data 1: Octetstring of N (where N≥1 and less than 1246)

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS traffic information)

Test procedure

a) The UE in RRC URA_PCH is triggered to wait for the next system information. The UE is activated to receive CBS messages,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE, this shall be repeated for "CPREP" times (indicated by parameter "repetition period")

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

Specific Message Contents

SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode - CTCH allocation period - CTCH frame offset Secondary CCPCH system - Secondary CCPCH information - TFCS - FACH/PCH information - TFS - CTCH indicator	(see RRC default test settings) N K 1 (see RRC default test settings) 1 (see RRC default test settings) TRUE (see RRC default test settings)

BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number - Geographic Scope Indicator (2 bit) - Message Code (10 bit) - Update Number (4 bit)	[see TS 23.041] 11 (Normal Cell wide) in accordance with the Message ID for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 1]

~~7.4.1.3.5~~7.4.2.3.5 Test requirements

The UE shall store and decode a received activated CBS message.

~~7.4.1.4~~7.4.2.4 UE in RRC Idle mode (ANSI-41 CB data)

~~7.4.1.4.1~~7.4.2.4.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of a certain CBS41 message content carried with certain activated CB41 message types in a clear way on UE side.

~~7.4.1.4.2~~7.4.2.4.2 Conformance requirement

A UE supporting Cell Broadcast Services shall be capable to receive BMC messages in RRC Idle mode. (…)BMC messages are identified: (…), CBS41 Message

Reference(s)

TS 25.324 clause 9.1.

~~7.4.1.4.3~~7.4.2.4.3 Test purpose

To verify, that a BMC configuration supporting ANSI-41 CB Data is able to receive activated CBS41 messages when in RRC Idle mode.

~~7.4.1.4.4~~7.4.2.4.4 Method of test

Initial conditions

UE is in RRC Idle mode; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS41 message support - YES/No

IXIT: CB41-Data 1: Octetstring of N (where N≥1 and less than 1246)

NOTE: For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS41 traffic information)

Test procedure

a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE; this shall be repeated for ”CPREP” times (indicated by parameter ”repetition period”)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K) In addition, the MIB and SIB 16 are sent as described below to setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS41 Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

Specific Message Contents

MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

SYSTEM INFORMATION TYPE 5 AND 6

The contents of SYSTEM INFORMATION TYPE 5 AND 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type	ANSI-41
- CN domain specific NAS information	
- NAS (ANSI-41) system information	T.B.D

BMC CBS41 Message

Information Element	Value/remark
Message Type	3 (CBS41 Message)
Broadcast Address	Bitstring (40) Address Information of higher layer
CB Data41	Octetstring, [see IXIT value: CB41-Data 1] (ANSI-41)

~~7.4.1.4.5~~7.4.2.4.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

~~7.4.1.5~~7.4.2.5 UE in RRC Connected mode, state CELL_PCH (ANSI-41 CB data)

~~7.4.1.5.1~~7.4.2.5.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS41 message contents carried with certain activated CB41 message types in a clear way on UE side.

~~7.4.1.5.2~~7.4.2.5.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL_PCH RRC-state of Connected mode. (…)BMC messages are identified: (…), CBS41 Message

Reference(s)

TS 25.324 clause 9.1.

~~7.4.1.5.3~~7.4.2.5.3 Test purpose

To verify, that a BMC configuration supporting ANSI-41 CB Data is able to receive activated CBS41 messages when in RRC Connected mode, state CELL_PCH.

~~7.4.1.5.4~~7.4.2.5.4 Method of test

Initial conditions

UE is in Connected mode state CELL_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB41 message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS41 message support - YES/No

IXIT: CBS41-Data 1: Octetstring of N (where N≥1 and less than 1246)

NOTE: For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side

Test procedure

a) The UE in RRC CELL_PCH is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB41 related system information, broadcasted by SS

c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE; this shall be repeated for "CPREP" times (indicated by parameter "repetition period")

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K) In addition, the MIB and SIB 13 are sent as described below for setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS41 Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

Specific Message Contents

MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type	ANSI-41
- CN domain specific NAS information	
- NAS (ANSI-41) system information	T.B.D

BMC CBS41 Message

Information Element	Value/remark
Message Type	3 (CBS41 Message)
Broadcast Address	Bitstring (40) Address Information of higher layer
CB Data41	Octetstring, [see IXIT value: CB41-Data 1] (ANSI-41)

~~7.4.1.5.5~~7.4.2.5.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

~~7.4.1.6~~7.4.2.6 UE in RRC Connected mode, state URA_PCH (ANSI-41 CB data)

~~7.4.1.6.1~~7.4.2.6.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of a certain CBS41 message content carried with certain activated CB41 message types in a clear way on UE side.

~~7.4.1.6.2~~7.4.2.6.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in URA_PCH RRC-state of Connected mode. (…)BMC messages are identified: (…), CBS41 Message

Reference(s)

TS 25.324 clause 9.1.

~~7.4.1.6.3~~7.4.2.6.3 Test purpose

To verify, that a BMC configuration supporting ANSI-41 CB Data is able to receive activated CBS41 messages when in RRC Connected mode, state URA_PCH.

~~7.4.1.3.4~~7.4.2.3.4 Method of test

Initial conditions

UE is in Connected mode state URA_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB41 message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS41 message support - YES/No

IXIT: CBS41-Data 1: Octetstring of N (where N≥1 and less than 1246)

NOTE: For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS41 traffic information)

Test procedure

a) The UE in RRC URA_PCH is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE, this shall be repeated for ”CPREP” times (indicated by parameter ”repetition period”)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K) In addition, the MIB and SIB 13 are sent as described below for setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS41 Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

Specific Message Contents

MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type	ANSI-41
- CN domain specific NAS information	
- NAS (ANSI-41) system information	T.B.D

BMC CBS41 Message

Information Element	Value/remark
Message Type	3 (CBS41 Message)
Broadcast Address	Bitstring (40) Address Information of higher layer
CB Data41	Octetstring, [see IXIT value: CB41-Data 1] (ANSI-41)

~~7.4.1.6.5~~7.4.2.6.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

~~7.4.2~~7.4.3 BMC message reception procedure

~~7.4.2.1~~7.4.3.1 Reception of certain CBS message types

~~7.4.2.1.1~~7.4.3.1.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of two different CBS message contents carried with different activated CB message types in a clear way on UE side.

It shall be possible to activate/deactivate the CBS message types used to receive CB Data 1 or 2.

~~7.4.2.1.2~~7.4.3.1.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in RRC Idle mode.

The BMC entity on UE side evaluates received BMC Schedule Messages and takes decisions which BMC messages are received.

If not otherwise requested by upper layers, only those CB messages received in BMC CBS Messages should be delivered to upper layers for which the Serial Number associated with the CB message has changed. This implies that the BMC has to store the last received Serial Number of each CB message activated by upper layers.

Reference(s)

TS 25.324 clause 9.1

TS 25.324 clause 9.4

7.4.3.1.3 Test purpose

1. To verify, that a UE supporting CBS ignores a deactivated CBS message type which has been broadcasted by SS.

2. To verify, that a UE only stores Serial Numbers of a newly transmitted CBS messages. This shall be verified by indication of a received CBS message with changed Serial Number as indication for the storage of Serial Numbers.

~~7.4.2.1.4~~7.4.3.1.4 Method of test

Initial conditions

UE is in RRC Idle mode.

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (as parameter for the CBS message PDU). The CBS data type shall be allocated and in the UE. It shall be possible to activate/deactivate such CBS data type.

Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS message support - YES/No

IXIT: - CBS-Data 1: Octetstring of N (where N≥1 and less than 1246), with used CB message ID for CB-Data 1

- CBS-Data 2: Octetstring of N (where N≥1 and less than 1246), with used CB message ID for CB-Data 2 (CB message ID for CB-Data 1 shall be different to CB message ID for CB-Data 2)

NOTE: For CBS data IXIT's, the manufacturer shall define CBS data as Octetstring as described in the IXIT, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. The manufacturer shall describe the indication on UE side for both CBS data types (e.g. certain CBS broadcast information shown in the display of the UE)

Test procedure

a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive ~~expected CBS messages (~~CBS data 1~~, and~~ CBS data 2~~)~~are deactivated ~~as described by the manufacturer,~~

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the first BMC CBS schedule message to predict the next CBS messages to the UE

d) The SS sends the CBS message containing CB-Data 1 to the UE, together with the CBS schedule message to predict the next CBS messages (repetition of CB Data 1, ~~first transmission of CB Data 2~~ and the next CBS schedule message)

e) The UE indicates on an unambiguous way, that this CB-Data 1 has been received by the UE (e.g. a unique part of the CBS data contents shown on the display)

f) The SS sends the repeated CB Data 1, ~~the new CB Data 2~~ and the next CBS schedule message to predict the next CBS messages to the UE. (CBS schedule message predicts the first repetition of CB Data ~~2 and the new transmission of CB Data 1~~)

g) The UE indicates on an unambiguous way, that CB-Data 2 has been received by the UE (e.g. a unique part of the CBS data contents shown in the display)

h) The UE deactivates the CB Message type ID used for CB-Data 1

i) The SS sends the ~~repeated~~ CB Data 2 ~~together with the newly sent CB Data 1~~ (as deactivated CB Data type) to the UE.

j) The UE ignores the newly received CB-Data 2~~1~~ i.e. there is no indication for this CB Data 2~~1~~ as described in step e)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit these messages as described below on the BCCH, in addition to the regular BCCH transmissions. Included are all CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive the CBS Data message
3		←	BMC CBS Schedule	Inband CBS schedule message with BMC schedule information Level 2 (DRX) to predict the next CB data block (CB Data 1 –new-, CBS Schedule message)
43		←	BMC CBS Message	Activated CBS message with certain CB data content (CBS data 1 as described by the manufacturer). This message shall be repeated "CPREP" times, is sent the first time. Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1 (new)
54				After having received the BMC CBS message (CB-Data 1) the UE shall indicate the reception in a clear way.
65		←	BMC CBS Schedule	Inband CBS schedule message with BMC schedule information Level 2 (DRX) to predict the next CB data block (CB Data 21 –new-, CB Data 1 –rep.1-, CBS Schedule message)
76		←	BMC CBS Message	Activated CBS message with certain CBS data content (CB-Data 2 as described by the manufacturer). This message is sent the first time. Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 2 (new)
87				After having received the BMC CB-Data 2 the UE shall indicate the reception in a clear way. This implies that the changed Serial Number of the CBS message has been stored on UE.
797b		←	BMC CBS Message	Activated CBS message with certain CB data content (CBS data 1 as described by the manufacturer). This message is repeated. Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1 (old)
8108				The UE deactivates "CB message type ID" used for CB-Data 1
9119		←	BMC CBS Schedule	Inband CBS schedule message with BMC schedule information Level 2 (DRX) to predict the next CB data block (CB Data 2 –rep.1 -,CB Data 21 –new-).
1210		←	BMC CBS Message	CBS message with certain CBS data content (CB-Data 2 as described by the manufacturer). This message is repeated, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 2 (old)

10~~13~~ ~~10b~~	←	BMC CBS Message	Deactivated CBS message with certain CB data content (CBS data 2~~1~~ as described by the manufacturer). This message is sent the first time. Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 2~~1~~ (new)
11~~14~~ ~~11~~			After having received the BMC CBS message (CB-Data 2~~1~~) the UE shall ignore the newly received CBS data 1 message, i.e. there is no indication as described by the manufacturer.

Specific Message Contents

SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode - CTCH allocation period - CTCH frame offset Secondary CCPCH system - Secondary CCPCH information - TFCS - FACH/PCH information - TFS - CTCH indicator	(see RRC default test settings) N K 1 (see RRC default test settings) 1 (see RRC default test settings) TRUE (see RRC default test settings)

BMC CBS Message (Step ~~3~~4 and ~~7b)~~9)7)

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041]
Serial Number - Geographic Scope Indicator (2 bit) - Message Code (10 bit) - Update Number (4 bit)	[see TS 23.041] 11 (Normal Cell wide) according with the Message ID for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 1]

BMC CBS Message (Step ~~6 and 10b)~~~~7 and~~ 10~~3~~)

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041]
Serial Number - Geographic Scope Indicator (2 bit) - Message Code (10 bit) - Update Number (4 bit)	[see TS 23.041] 11 (Normal Cell wide) according with the Message ID for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 2]

~~BMC CBS Message (Step 10)~~12~~)~~

~~Information Element~~	~~Value/remark~~
~~Message Type~~	~~1 (CBS message)~~
~~Message ID~~	~~Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041]~~
~~Serial Number~~ ~~- Geographic Scope Indicator (2 bit)~~ ~~- Message Code (10 bit)~~ ~~- Update Number (4 bit)~~	~~[see TS 23.041]~~ ~~11 (Normal Cell wide)~~ ~~according with the Message ID~~ ~~for a new message: 0000, incremented by one for each repetition~~
~~Data Coding Scheme~~	~~Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]~~
~~CB Data~~	~~Octetstring, [see IXIT value: CB-Data 1]~~

BMC Schedule Message (Step ~~5~~3,6 and Step ~~9)~~911~~)~~

The parameters for BMC Schedule Message (inband schedule message) in Step 5 are inserted for CB-Data 2 and in Step 8 for CB-Data 1.

Information Element	Value/remark
Message Type	2 (Schedule message)
Offset to begin CTCH BS index	calculated offset value of the BS (Integer: 0...255) as recommended in TR 25.925
Length of CBS Schedule Period	Number of consecutive CTCH BS of the next CBS Schedule Period, (Integer: 1...255) as recommended in TR 25.925
New Message Bitmap	Bitmap (N*8), N = Length of CBS Schedule Period as recommended in TR 25.925
Message Description - Message Description Type	1 for new message (see TS 25.324, Table 11.9-3) 5 for old message (see TS 25.324, Table 11.9-3)
- Message ID	CB message ID used for the next CB data
- Offset to CTCH (BS index of first transmission)	for Message description type 1 or 5: CB message ID IE included (see TS 23.041)

~~7.4.2.1.5~~7.4.3.1.5 Test requirements

After having received the CB-Data 1 message (step ~~3),~~4), the UE shall store the Serial Number of this message and indicate the reception of the CBS message as described by the manufacturer.

~~After having received the CB-Data 2 message (step 6),7), the UE shall store the Serial Number of this message and indicate the reception of the CBS message as described by the manufacturer.~~

After CB-Data 2~~1~~ message was newly broadcasted (step ~~9),~~102~~2~~), the UE shall not indicate the reception for the deactivated CBS message (CB-Data 1).

3GPP TSG-T1 Meeting #13
Cancun, Mexico, 29 – 30 Nov 2001

Tdoc T1-010408

3GPP TSG-T1/SIG Meeting #20
Cancun, Mexico, 26 – 28 Nov 2001

Tdoc T1S-010340r2

CR-Form-v4

CHANGE REQUEST

⌘ **34.123-1** **CR** **115** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Update to UM and AM RLC test cases
Source:	⌘	MCC task 160 / Anritsu, Ericsson
Work item code:	⌘	TEI
Date:	⌘	2001-11-21
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘

- Update of RLC tests to use of the common RB agreed during the T1/SIG#18 meeting.
- Timer tolerances in test requirements should be removed from test cases (general tolerances of timers in 34.108 to be applied instead)
- Correction of specific RLC UM and AM test cases
  - Test case 7.2.2.4 and 7.2.2.9:
    Clarification that also reassembly is tested.
  - Test case 7.2.2.5, 7.2.2.6, 7.2.2.7, 7.2.2.11 and 7.2.2.12:
    Correction of title
  - Test case 7.2.2.7 and 7.2.2.13:
    Clarification of the use of 'First Data Octet LI' needed.
  - Test case 7.2.3.2:
    Incorrect "£" symbol in test purpose (should be "≤")
  - Test case 7.2.3.3 and 7.2.3.7:
    Expanding test case also to cover reassembly.
  - Test case 7.2.3.4 and 7.2.3.8:
    Clarification that also reassembly is tested.
  - Test case 7.2.3.5 and 7.2.3.10:
    - Correction of title
    - Test Requirement not complete.
    - RLC parameter 'Missing PDU Indicator' need to be defined as FALSE to ensure that only one STATUS PDU is returned by the UE.

- Test case 7.2.3.6 and 7.2.3.11:
  Clarification that it is a reassembly test case.
- Test case 7.2.3.12:
  To test the receiver's behaviour to SNs wrapping around. Currently the poll in each 128th PDU transmitted, uplink STATUS PDUs, uplink polling and downlink STATUS PDU(s) are missing from Expected Sequence.
- Test case 7.2.3.13:
  Downlink RLC in Method of test need not be configured. There are no missing DL PDUs, and the Receiving window size must be set to at least 24 so that none of the PDUs sent in Step a) of the Test procedure are discarded.
- Test case 7.2.3.14:
  Incorrect SN value in step 12.
- Test case 7.2.3.16:
  The test scenario isn't valid. As it is written, the SS receiver would not know anything about PDUs not received (step 8), to be able to nack them; nor can it send a STATUS PDU as a result of receiving polling, since no PDUs (containing polling) would have been received at all.
- Test case 7.2.3.18:
  Last transmission PDU should be disabled in Initial Conditions, to ensure that Poll_SDU is being tested and not 'Last transmission PDU', see step 13.
- Test case 7.2.3.19:
  - To avoid unwanted polling after step 19, "Last transmission PDU poll" should be disabled.
  - Confusing word "unacknowledged" in Test Procedure d).
  - Missing Test Requirement T3-T2.
  - SS should only nack PDU with SN=ceil(2T/TTI)-1 in step 12.
- Test case 7.2.3.20:
  - To ensure reliable test case operation under all SS conditions, "Last transmission PDU poll" should be disabled.
  - Steps in Expected Sequence are out of order.
  - "SDU W/2" in step 3 of Expected Sequence should read "SDU W/2+2".
- Test case 7.2.3.21:
  To ensure Poll in step 10 is due to Timer_Poll, "Last transmission PDU poll" should be disabled.
- Test case 7.2.3.22:
  - To ensure Poll in step 11 is due to Timer_Poll_Periodic, "Last transmission PDU poll" should be disabled.
  - Stopping Timer_Poll due to negative acknowledgement is not tested by the test case.
- Test case 7.2.3.23:
  - SN value in step 12 incorrect (should be SN=2*Poll_PU-1 instead of SN=2*Poll_PU-2).
  - To ensure Poll in step 15 is due to Timer_Poll, "Last transmission PDU poll" should be disabled.
- Test case 7.2.3.24:

Corrections to Test Procedure and Expexted Sequence.

- Test case 7.2.3.27:
  Missing Test Requirement, to check that no further STATUS PDUs are received after step 8. To verify that only ONE STATUS report is sent on Timer expiry.
- Test case 7.2.3.28:
  - For a shorter test duration, the loopback uplink SDU size need only be 2* Poll_PDU * 16 + a few bytes. i.e. large enough to generate 2 polls from the UE in steps 7 and 9.
  - According to 25.331, the value of Poll_PDU is not legal.
- Test case 7.2.3.29:
  - It is not necessary to set Timer_MRW, MaxMRW, Timer_Status_Prohibit, and Timer_STATUS_periodic for the test case.
  - Simplification of test procedure.
- Test case 7.2.3.30:
  - MaxDAT, if active, should be set to 40 in Initial Conditions to avoid SDU Discard due to VT(DAT)>=MaxDAT.
  - Simplification of test procedure.
  - Calculation N_{LENGTH} - 1 in step 17 may result in a value less than zero.
  - Requirement 3 can only be fulfilled by a UE if concatenation takes place in the uplink. Concatenation is not tested by the test case.
- Test case 7.2.3.31:
  - MaxDAT, if active, should be set to 40 in Initial Conditions to avoid SDU Discard due to VT(DAT)>=MaxDAT.
  - In the Test Requirements, there should be 3 repeats after step 17, not 4 repeats after step 16. The MRW command sent in step 16 is not a repeat, but the start of a new MRW procedure.
- Test case 7.2.3.33:
  - There is one too many Retransmissions of the PDU with SN=0.
  - There is one too many uplink PDUs for SDU3.
  - Clarification of 2nd Test Requirement.

Summary of change: ⌘ **Changes to RLC UM test cases:**

1. Removed timer tolerances in test requirements as general tolerances of timers in 34.108 applies instead.
2. 7.2.2.1:

a. Updated to use new common RB configurations specified in 3G TS 34.108 clauses 6.11.1 and 6.11.2 for UM testing.

3. 7.2.2.2:
   a. Updated to use common RB configurations, and a fixed SDU size for both 7 and 15 bit LI parts of the test.
   b. Changed transport channel reconfiguration to RB release followed by a new RB establishment.
4. 7.2.2.3:
   a. Updated to use generic SDU sizes calculated from the payload size (UM tests with 7 bit LIs)
5. 7.2.2.4:
   a. Added reassembly in title and Test Purpose.
   b. Updated to use generic SDU sizes calculated from the payload size (UM tests with 7 bit LIs)
6. 7.2.2.5 and 7.2.2.6:
   a. Changed title from Segmentation to Reassembly.
   b. Updated to use generic SDU sizes calculated from the payload size (UM tests with 7 bit LIs)
7. 7.2.2.7:
   a. Changed title from Segmentation to Reassembly
   b. Changed Test Procedure and Expected sequence so that SS use LI = 'First Data Octet LI' for both transmitted SDUs.
8. 7.2.2.8:
   a. Updated to use generic SDU sizes calculated from the payload size (UM tests with 15 bit LIs)
9. 7.2.2.9:
   a. Add reassembly in title and test purpose
   b. Updated to use generic SDU sizes calculated from the payload size (UM tests with 15 bit LIs)
10. 7.2.2.10
    a. Updated to use generic SDU sizes calculated from the payload size (UM tests with 15 bit LIs)
11. 7.2.2.11 and 7.2.2.12:
    a. Changed title from Segmentation to Reassembly.
    b. Updated to use generic SDU sizes calculated from the payload size (UM tests with 15 bit LIs)
12. 7.2.2.13: Same changes as for 7.2.2.7.

Changes to RLC AM test cases:

13. 7.2.3.1:
    a. Updated to use new common RB configurations specified in 3G TS 34.108 clauses 6.11.3 and 6.11.4 for AM testing.
14. 7.2.3.2:
    a. Updated to use common RB configurations, and a fixed SDU size for both 7 and 15 bit LI parts of the test.
    b. Changed symbol "£" to "≤" in test purpose.

c. Changed transport channel reconfiguration to RB release followed by a new RB establishment.

15. 7.2.3.3:
    a. Add reassembly in title
    b. Test purpose, method of test and test requirement changed to also cover the reassembly case with and without piggy-backed status.
    c. Updated to use generic SDU sizes calculated from the payload size
16. 7.2.3.4:
    a. Added reassembly in title
    b. Updated to use generic SDU sizes calculated from the payload size
    c. Updated test purpose to also cover teh reassembly case.
17. 7.2.3.5:
    a. Replaced Segmentation with Reassembly in title.
    b. Addition of 'Missing PDU Indicator' = FALSE to ensure that only one STATUS PDU is returned by the UE.
    c. Updated to use generic SDU sizes calculated from the payload size
    d. Added extra Test Requirement stating that no uplink SDUs shall be received.
18. 7.2.3.6:
    a. Replaced Segmentation with Reassembly in title
    b. Addition of 'Missing PDU Indicator' = FALSE to ensure that only one STATUS PDU is returned by the UE.
    c. Updated to use generic SDU sizes calculated from the payload size
19. 7.2.3.7: Same change as for 7.2.3.3
20. 7.2.3.8: Same change as for 7.2.3.4
21. 7.2.3.9:
    a. Updated to use generic SDU sizes calculated from the payload size
22. 7.2.3.10: Same change as for 7.2.3.5.
23. 7.2.3.11: Same change as for 7.2.3.6.
24. 7.2.3.12:
    a. Added verification of receiver behaviour when SNs wrap around to Test Purpose.
    b. Updated window sizes to be consistent with values supported by RRC ASN.1.
    c. Updated to use generic SDU sizes calculated from the payload size
    d. Added Poll in each 128th PDU transmitted, uplink STATUS PDUs, uplink polling and downlink STATUS PDU(s) to Expected Sequence.
25. 7.2.3.13:

a. Removed Downlink RLC configuration in Method of test section.
b. Updated to use generic SDU sizes calculated from the payload size
c. Removed unnecessary polling from step a).

26. 7.2.3.14:
    a. Updated to use generic SDU sizes calculated from the payload size
    b. Changed specified SN value to W from W+1
27. 7.2.3.15:
    a. Updated to use generic SDU sizes calculated from the payload size
28. 7.2.3.16:
    a. Updated to use generic SDU sizes calculated from the payload size
    b. Test scenario is modified such that it emulates that it is only the first PDU which not is received. As the last uplink PDU is received by the SS the SS behaviour will be in accordance to the RLC core specification (nack on 'Missing PDU Indicator') and legitimately respond with a nack for preceding uplink PDUs.
29. 7.2.3.17:
    a. Updated to use generic SDU sizes calculated from the payload size
30. 7.2.3.18:
    a. Added Last transmission PDU = FALSE to initial conditions.
    b. Updated to use generic SDU sizes calculated from the payload size
31. 7.2.3.19:
    a. Added "Last transmission PDU poll" = FALSE in Initial conditions.
    b. Updated to use generic SDU sizes calculated from the payload size
    c. Clarified step d) of the Test Procedure.
    d. Changed "SN ceil(2T/TTI)" in step 12 to "SN ceil(2T/TTI)-1".
    e. Added missing Test Requirement for time T3-T2.
32. 7.2.3.20:
    a. Added "Last transmission PDU poll" = FALSE in Initial conditions.
    b. Updated to use generic SDU sizes calculated from the payload size
    c. Changed "SDU W/2" in step 3 of Expected Sequence to "SDU W/2+2".
    d. Corrected step numbers in Expected Sequence.
33. 7.2.3.21:
    a. Added "Last transmission PDU poll" = FALSE in Initial conditions.
    b. Updated to use generic SDU sizes calculated from the payload size
34. 7.2.3.22:

a. Removed reference to stopping Timer_Poll due to negative acknowledgement in Test Purpose.
b. Added “Last transmission PDU poll” = FALSE in Initial conditions.
c. Updated to use generic SDU sizes calculated from the payload size

35. 7.2.3.23:
    a. Added “Last transmission PDU poll” = FALSE in Initial conditions and deleted Poll_SDU.
    b. Updated to use generic SDU sizes calculated from the payload size
    c. Changed to Ack PDU with SN=2*Poll_PDU-1 in step 12.
36. 7.2.3.24:
    a. Added to test purpose to verify that UE polls only once after Timer_Poll_Prohibit expires even though triggered several times during the prohibit time.
    b. Added “Last transmission PDU poll” = FALSE in Initial conditions and deleted Poll_SDU.
    c. Updated to use generic SDU sizes calculated from the payload size
    d. Changed test procedure step a) to SS transmitting [2*Poll_PDU + ceil(T / TTI)] SDUs instead of [(Transmission Window Size / 2) + ceil(T / TTI)] SDUs.
    e. Changed in step 12 of Expected Sequence that last poll to be in PDU with SN = poll_PU + ceil(T/TTI)-1.
    f. Added test requirement accordance with new test purpose
37. 7.2.3.25 to 7.2.3.26:
    a. Updated to use generic SDU sizes calculated from the payload size
38. 7.2.3.27:
    a. Updated to use generic SDU sizes calculated from the payload size
    b. Added to Test Requirement that only one STATUS PDU shall be received after Timer_Status_Prohibited expiry.
39. 7.2.3.28:
    a. Changed the Poll_PDU value from 10 to 4 to be consistent with allowed values as specified by 25.331.
    b. Added size of SDU sent by SS in step a) of the test procedure.
    c. Updated to use generic SDU sizes calculated from the payload size
40. 7.2.3.29:
    a. Removed timer definitions which are not essential to achieve the test purpose from Initial Conditions.
    b. Updated to use generic SDU sizes calculated from the payload size
    c. Changed Test Procedure and Expected Sequence to simplify the test.
41. 7.2.3.30:

a. Added definition of MaxDAT and removed Timer_poll_periodic in Initial Conditions.

b. Updated to use generic SDU sizes calculated from the payload size

c. Changed Test Procedure and Expected Sequence.

d. Changed N_{LENGTH} - 1 in step 17 to (N_{LENGTH} + 1) modulo 4, to avoid case where N_{LENGTH} = 0 or starting SN <> 0.

e. Changed test requirement 3 to add time tolerances and to verify that the content of the received MRW command is identical for all retransmission of the STATUS PDUs.

42. 7.2.3.31:

a. Added definition of MaxDAT=40 in Initial Conditions to avoid SDU Discard due to VT(DAT)>=MaxDAT.

b. Updated to use generic SDU sizes calculated from the payload size

c. Changed Test Requirements to state 3 repeats after step 17.

43. 7.2.3.32:

a. Updated to use generic SDU sizes calculated from the payload size

44. 7.2.3.33:

a. Updated to use generic SDU sizes calculated from the payload size

b. Removed steps 15, 16, 23, 32 and 33 as there are on to many retransmissions of the PDU with SN=0.

c. Added time tolerance to test requirement 1 and text “in steps 22 to 24” to Test Requirement 2.

45. 7.2.3.34:

a. Updated to use generic SDU sizes calculated from the payload size

Consequences if not approved:	⌘	Special RB configurations will be required that will only be used for RLC testing. Incorrect RLC test cases.

Clauses affected:	⌘	7.2		
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	R99 and REL-4		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.2 RLC testing

7.2.1 Transparent mode

7.2.1.1 Segmentation and reassembly

Transparent mode segmentation and reassembly are not tested in this release of the specification.

7.2.2 Unacknowledged mode

7.2.2.1 General information for UM tests

A Two generic Radio Access Bearers is are provided for UM tests. This RAB is based upon the Stand-alone 3.4kbps UL/DL Signalling RB, with an additional UM 3,4 kbps path mapped to a DTCH. This logical channel is multiplexed on the same transport channel as the DCCH.

The UM test RAB is set up using the Generic Procedure described in clause 7.1.3 of TS 34.108, and with the default RAB replaced as follows:

- For UM 7-bit length indicator tests: the RB configuration described in 3G TS 34.108 clause 6.11.1 is used. For these tests, let UM_7_PayloadSize denote the RAB payload size in octets.
- For UM 15-bit length indicator tests: the RB configuration described in 3G TS 34.108 clause 6.11.2 is used. For these tests, let UM_15_PayloadSize denote the RAB payload size in octets.

Table 7.2/1 RAB Configuration for UM testing (7-bit Lis)

Higher layer	RAB/signalling RB	SRB#1	SRB#2	SRB#3	SRB#4	RAB #1
	User of Radio Bearer	RRC	RRC	NAS_DT High prio	NAS_DT Low prio	User Plane
RLC	Logical channel type	DCCH	DCCH	DCCH	DCCH	DTCH
	RLC mode	UM	AM	AM	AM	UM
	Payload sizes, bit	136	128	128	128	136
	Max data rate, bps	3400	3200	3200	3200	3400
	AMD/UMD PDU header, bit	8	16	16	16	8
MAC	MAC header, bit	4	4	4	4	4
	MAC multiplexing	4 logical channel multiplexing				
Layer 1	TrCH type	DCH				
	TB sizes, bit	148				
	TFS – TF0, bits	0				
	TFS – TF1, bits	1x148				
	TTI, ms	40				
	Coding type	CC 1/3				
	CRC, bit	16				
	Max number of bits/TTI before rate matching	516				
	Uplink: Max number of bits/radio frame before rate matching	129				

The UM test RABs is are used in all tests with the following exceptions:

- Tests that only involve 15-bit length indicators;
- Tests that explicitly specify a different Radio Bearer configuration.

Tests that involve only 15-bit length indicators require a modified Radio Bearer configuration. To accommodate the larger payload size, these tests use a coded composite transport channel consisting of two DCH. The first DCH is specified as for the 7-bit length indicators, but not including the DTCH (RAB#1). This is shown in table 7.2/2A.

Table 7.2/2A SRB Configuration for UM testing (15-bit Lis)

Higher layer	Signalling RB: **DCH 0**		**SRB#1**	**SRB#2**	**SRB#3**	**SRB#4**
	User of Radio Bearer		RRC	RRC	NAS_DT High prio	NAS_DT Low prio
RLC	Logical channel type		DCCH	DCCH	DCCH	DCCH
	RLC mode		UM	AM	AM	AM
	Payload sizes, bit		136	128	128	128
	Max data rate, bps		3400	3200	3200	3200
	AMD/UMD PDU header, bit		8	16	16	16
MAC	MAC header, bit		4	4	4	4
	MAC multiplexing		4 logical channel multiplexing			
Layer 1	TrCH type		DCH			
	TB sizes, bit		148			
	TFS	TF0, bits	0			
		TF1, bits	1x148			
	TTI, ms		40			
	Coding type		CC 1/3			
	CRC, bit		16			
	Max number of bits/TTI before rate matching		516			
	Uplink: Max number of bits/radio frame before rate matching		129			

This DCH is combined with a traffic DCH (at lower MAC priority) as described in table 7.2/2B.

Table 7.2/2B RAB Configuration for UM testing (15-bit Lis)

Higher layer	RAB: **DCH 1**		**RAB**
RLC	Logical channel type		DTCH
	RLC mode		UM
	Payload sizes, bit		1280
	Max data rate, bps		64000
	UMD PDU header, bit		8
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		1288
	TFS	TF0, bits	0
		TF1, bits	1x1288
	TTI, ms		20
	Coding type		TC
	CRC, bit		16

All other settings are the same.

7.2.2.2 Segmentation and reassembly / Selection of 7 or 15 bit Length Indicators

7.2.2.2.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The selection of the size of the length indicator fields used must follow the specified rules. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.2.2 Conformance requirement

The size of the Length Indicator may be either 7 bits or 15 bits.

For UM, 7 bit indicators shall be used if the UMD PDU size is ≤ l25 octets. Otherwise 15bit indicators shall be used.

The length of the Length Indicator only depends on the size of the largest RLC PDU. The length of the Length Indicator is always the same for all PDUs, for one RLC entity.

Reference(s)

TS 25.322 clauses 9.2.2.8 and 9.2.2.9.

7.2.2.2.3 Test purpose

To test that if the size of the largest PDU is ≤ l25 octets, 7 bit indicators are used, otherwise, 15 bit indicators are used.

7.2.2.2.4 Method of test

Initial conditions

~~The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the following exceptions:~~

~~Higher layer~~	~~RAB/Signalling RB~~		~~RAB~~
~~RLC~~	~~Logical channel type~~		~~DTCH~~
	~~RLC mode~~		~~UM~~
	~~Payload sizes, bit~~		~~960~~
	~~Max data rate, bps~~		~~48000~~
	~~UMD PDU header, bit~~		~~8~~
~~MAC~~	~~MAC header, bit~~		~~0~~
	~~MAC multiplexing~~		~~N/A~~
~~Layer 1~~	~~TrCH type~~		~~DCH~~
	~~TB sizes, bit~~		~~968~~
	~~TFS~~	~~TF0, bits~~	~~0~~
		~~TF1, bits~~	~~1x968~~
	~~TTI, ms~~		~~20~~
	~~Coding type~~		~~TC~~
	~~CRC, bit~~		~~16~~

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to 140 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 180 bytes.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink.

c) The SS releases the RB, and performs the Radio Bearer establishment procedure (clause 7.1.3 of TS 34.108) with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in clause 7.2.2.1. ~~reconfigures the Transport Channel as follows:~~

~~Higher layer~~	~~RAB/Signalling RB~~		~~RAB~~
~~RLC~~	~~Logical channel type~~		~~DTCH~~
	~~RLC mode~~		~~UM~~
	~~Payload sizes, bit~~		~~1280~~
	~~Max data rate, bps~~		~~64000~~
	~~UMD PDU header, bit~~		~~8~~
~~MAC~~	~~MAC header, bit~~		~~0~~
	~~MAC multiplexing~~		~~N/A~~
~~Layer 1~~	~~TrCH type~~		~~DCH~~
	~~TB sizes, bit~~		~~1288~~
	~~TFS~~	~~TF0, bits~~	~~0~~
		~~TF1, bits~~	~~1x1288~~
	~~TTI, ms~~		~~20~~
	~~Coding type~~		~~TC~~
	~~CRC, bit~~		~~16~~

All other settings the same.

d) The SS transmits an RLC SDU of size 180 bytes.

e) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink.

f) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures for UM 7 bit LIs
2	←		DOWNLINK RLC PDU	180 byte SDU + padding
3	→		UPLINK RLC PDU	140 byte SDU + padding
4	←		~~TRANSPORT CHANNEL RECONFIGURATION~~RB RELEASE	~~PU size > 127 bytes~~
5			RB ESTABLISHMENT	See generic procedures for UM 15 bit LIs (largest UMD PDU size > 125 bytes)
6~~5~~	←		DOWNLINK RLC PDU	180 byte SDU + padding
7~~6~~	→		UPLINK RLC PDU	140 byte SDU + padding
8~~7~~			RB RELEASE	Optional step

7.2.2.2.5 Test requirements

1. The UE shall send 7 bit length indicators with values that correctly indicate the end of the SDU received in step 3.

2. The UE shall send 15 bit length indicators with values that correctly indicate the end of the SDU received in step ~~6~~7.

7.2.2.3 Segmentation and reassembly / 7-bit Length Indicators / Padding

7.2.2.3.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.3.2 Conformance requirement

A PDU that has unused space, to be referred to as padding, shall use a Length Indicator to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding Length Indicator must be placed after any Length Indicators for a PDU.

One length indicator field shall be included for each end of a SDU that the PDU includes. The LI shall be set equal to the number of octets between the end of the header fields and the end of the segment. If padding is needed, another LI field set to only 1's shall be added unless the padding size is one octet for PDUs with 15-bit LIs.

Reference(s)

TS 25.322 clauses 9.2.2.8 and 11.2.2.1.

7.2.2.3.3 Test purpose

1. To test that the UE correctly segments a large SDU and padding is added at the end.
2. To test that the UE correctly deals with a 7-bit padding LI when present in a received PDU.

7.2.2.3.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to ~~18~~ UM_7_PayloadSize + 1 bytes.

Test procedure

a) The SS transmits an RLC SDU of size UM_7_PayloadSize + 1 ~~18~~ bytes. The second of the 2 PDUs sent shall contain an LI indicating that padding is present.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & Padding
4	→		UPLINK RLC PDU	No LI
5	→		UPLINK RLC PDU	Check LIs and re-assembled SDU
6			RB RELEASE	Optional step

7.2.2.3.5 Test requirements

1. The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate that the remainder of the PDU contains padding.

2. The length and data content of the received SDU should be the same as the transmitted SDU.

7.2.2.4 Segmentation and Reassembly / 7-bit Length Indicators / LI = 0

7.2.2.4.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. A pre-defined length indicator value is used to indicate when an SDUs ends coincident with the end of the previous PDU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.4.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an LI field, an LI field set to only 0's shall be included as the first length indicator in the following PDU.

Reference(s)

TS 25.322 clause 11.2.2.1

7.2.2.4.3 Test purpose

1. To test that where an SDU exactly fills a PDU, an LI of value zero is placed by the transmitter as the first LI in the next PDU.

2. To test that where an SDU exactly fills a PDU, the receiver accepts an LI of value of zero, placed as the first LI in the next PDU.

7.2.2.4.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to ~~17~~ UM_7_PayloadSize bytes.

Test procedure

a) The SS transmits an RLC SDU of size ~~34~~ 2 * UM_7_PayloadSize bytes.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0 and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.4.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU exactly filled the previous PU, and an LI indicating that the remainder of the PDU contains padding.

The length of the received SDU should be UM_7_PayloadSize ~~17~~ bytes, and the data content the same as the first UM_7_PayloadSize ~~17~~ bytes of the transmitted SDU.

7.2.2.5 ~~Segmentation~~ Reassembly / 7-bit Length Indicators / Invalid LI value

7.2.2.5.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.5.2 Conformance requirement

Upon reception of an UMD PDU that contains Length Indicator value 1111110 ("piggybacked STATUS PDU") the receiver shall discard that UMD PDU.

Reference(s)

TS 25.322 clause 11.2.4.1.

7.2.2.5.3 Test purpose

To test that PDUs with invalid length indicators are discarded by the receiving RLC.

7.2.2.5.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1with the UL SDU size set to UM_7_PayloadSize + 1 ~~24~~ bytes.

Test procedure

a) The SS transmits two RLC SDUs of size UM_7_PayloadSize + 1 ~~24~~ bytes. In the third PDU for transmission, the SS sets the value of the second (padding) LI to 1111110.

b) The SS checks the length indicator sizes and values of any RLC PDUs returned on the uplink, and checks for the presence of any received RLC SDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 and invalid LI (=11111110)
5	→		UPLINK RLC PDU	SDU 1
6	→		UPLINK RLC PDU	SDU 1: Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.5.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the end of the SDU, and a padding LI.

The length and data content of the received SDU should be the same as the first transmitted SDU. The second SDU should not be returned.

7.2.2.6 ~~Segmentation~~ Reassembly / 7-bit Length Indicators / LI value > PDU size

7.2.2.6.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.6.2 Conformance requirement

If the length indicator of a PDU has a value that is larger than the PDU size – the number of octets containing LIs in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 clause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

If a PDU with sequence number < VR(US) is missing then all SDUs that have segments in this PDU shall be discarded.

Reference(s)

TS 25.322 clauses 11.2.4.2 and 11.2.3.

7.2.2.6.3 Test purpose

To test that PDUs with length indicators that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.2.6.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to UM_7_PayloadSize + 1 ~~24~~ bytes.

Test procedure

a) The SS transmits three RLC SDUs of size UM_7_PayloadSize + 1 ~~24~~ bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the length indicator to be UM_7_PayloadSize + 1 ~~18~~ (decimal).

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 & SDU 3, with bad LI
~~5~~	~~←~~		~~DOWNLINK RLC PDU~~	~~SDU 3~~
5~~6~~	←		DOWNLINK RLC PDU	SDU 3 and padding
6~~7~~	→		UPLINK RLC PDU	SDU 1
7~~8~~	→		UPLINK RLC PDU	SDU 1 and padding: Check Lis and re-assembled SDU
8~~9~~			RB RELEASE	Optional step

7.2.2.6.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the end of an SDU and an LI indicating that the remainder of the PDU contains padding.

The length and data content of the received SDU should be the same as the first transmitted SDU. No further SDUs or PDUs should be received.

7.2.2.7 ~~Segmentation~~ Reassembly / 7-bit Length Indicators / First data octet LI

7.2.2.7.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. A special LI is defined to indicate that the start of on SDU is coincident with the start of the PDU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.7.2 Conformance requirement

LI = 1111100, UMD PDU: The first data octet in this RLC PDU is the first octet of a RLC SDU.

Reference(s)

TS 25.322 clause 9.2.2.8.

7.2.2.7.3 Test purpose

To test that a UE in unacknowledged mode correctly handles a received RLC PDU with a 7-bit length indicator having its value equal to the special length indicator value 1111100.

7.2.2.7.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to 12 bytes.

Test procedure

a) The SS transmits a ~~normal~~ RLC SDU of size 12 bytes in a PDU which has the 'First Data Octet LI' as the first LI in the PDU.

b) The SS waits until the SDU has been received back from the UE, and then transmits another SDU of 12 bytes in a PDU which has the 'First Data Octet LI' as the first LI in the PDU.

c) The SS waits until this SDU has been received back from the UE.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1 with LI = 1111100
3			…	Wait for loopback
4	→		UPLINK RLC PDU	SDU 1
5	←		DOWNLINK RLC PDU	SDU 2 with LI = 1111100
6	→		UPLINK RLC PDU	SDU 2
7			RB RELEASE	Optional step

7.2.2.7.5 Test requirements

1. The UE shall return two RLC PDUs.

2. The length and data content of each received SDU should be the same as the transmitted SDU.

7.2.2.8 Segmentation and reassembly / 15-bit Length Indicators / Padding

7.2.2.8.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.8.2 Conformance requirement

A PDU that has unused space, to be referred to as padding, shall use a Length Indicator to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding Length Indicator must be placed after any Length Indicators for a PU.

One length indicator field shall be included for each end of a SDU that the PDU includes. The LI shall be set equal to the number of octets between the end of the header fields and the end of the segment. If padding is needed, another LI field set to only 1's shall be added unless the padding size is one octet for PDUs with 15-bit LIs.

Reference(s)

TS 25.322 clauses 9.2.2.8 and 11.2.2.1.

7.2.2.8.3 Test purpose

1. To test that the UE correctly segments a large SDU and padding is added at the end.

2. To test that the UE correctly deals with a 15-bit padding LI when present in a received PDU.

7.2.2.8.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to UM_15_PayloadSize + 1 ~~161~~ bytes.

Test procedure

a) The SS transmits an RLC SDU of size UM_15_PayloadSize + 1 ~~161~~ bytes. The second of the 2 PDUs sent shall contain an LI indicating that padding is present.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & Padding
4	→		UPLINK RLC PDU	No LI
5	→		UPLINK RLC PDU	Check LIs and re-assembled SDU
6			RB RELEASE	Optional step

7.2.2.8.5 Test requirements

1. The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate that the remainder of the PDU contains padding.

2. The length and data content of the received SDU should be the same as the transmitted SDU.

7.2.2.9 Segmentation and Reassembly / 15-bit Length Indicators / LI = 0

7.2.2.9.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. A pre-defined length indicator value is used to indicate when an SDUs ends coincident with the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.9.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an LI field, an LI field set to only 0's shall be included as the first length indicator in the following PDU.

Reference(s)

TS 25.322 clause 11.2.2.1.

7.2.2.9.3 Test purpose

1. To test that where an SDU exactly fills a PDU, an LI of value zero is placed by the transmitter as the first LI in the next PDU.

2. To test that where an SDU exactly fills a PDU, and an LI of value zero is the first LI in the next PDU, the receiver correctly reassembles the PDU.

7.2.2.9.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to ~~160~~ UM_15_PayloadSize bytes.

Test procedure

a) The SS transmits an RLC SDU of size ~~320~~ 2 * UM_15_PayloadSize bytes.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0 and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.9.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU exactly filled the previous PU, and an LI indicating that the remainder of the PDU contains padding.

The length of the received SDU should be UM_15_PayloadSize ~~160~~ bytes, and the data content the same as the first UM_15_PayloadSize ~~160~~ bytes of the transmitted SDU.

7.2.2.10 Segmentation and reassembly / 15-bit Length Indicators / One octet short LI

7.2.2.10.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. A pre-defined length indicator value is used to indicate when an SDUs ends one octet short of the end of the previous PDU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.10.2 Conformance requirement

In the case where the last segment of an RLC SDU is one octet short of exactly filling the last RLC PDU, and 15-bit Length Indicators are used, the next Length Indicator shall be placed as the first Length Indicator in the next PDU and have value LI=111 1111 1111 1011.

In the case where a PDU contains a 15-bit LI indicating that an SDU ends with one octet left in the PDU, the last octet of this PDU shall be ignored and shall not be filled with the first octet of the next SDU data.

Reference(s)

TS 25.322 clause 9.2.2.8.

7.2.2.10.3 Test purpose

1. To test that where the UE transmits an SDU, which is one byte short of filling a PDU, an LI indicating one byte short is placed as the first LI in the next PDU.
2. To test that where the UE correctly handles a received PDU containing an LI indicating that an SDU ended one byte short of the end of the previous PDU.

7.2.2.10.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to UM_15_PayloadSize - 1~~159~~ bytes.

Test procedure

a) The SS transmits an RLC SDU of size ~~319~~ (2 * UM_15_PayloadSize) - 1 bytes.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=111 1111 1111 1011 and padding
5	→		UPLINK RLC PDU	No LIs
6	→		UPLINK RLC PDU	Check LIs and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.10.5 Test requirements

1. The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have 2 LIs. The first LI shall be an LI indicating that the SDU was one byte short of filling the previous PDU, and the second an LI indicating that the remainder of the PDU contains padding.

2. The length of the received SDU should be UM_15_PayloadSize - 1~~59~~ bytes, and the data content the same as the first UM_15_PayloadSize - 1~~59~~ bytes of the transmitted SDU.

7.2.2.11 ~~Segmentation~~ Reassembly / 15-bit Length Indicators / Invalid LI value

7.2.2.11.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.11.2 Conformance requirement

Upon reception of an UMD PDU that contains Length Indicator value 111111111111110 ("piggybacked STATUS PDU") the receiver shall discard that UMD PDU.

Reference(s)

TS 25.322 clause 11.2.4.1.

7.2.2.11.3 Test purpose

To test that PDUs with invalid length indicators are discarded by the receiving RLC.

7.2.2.11.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to ~~220~~ UM_15_PayloadSize + 1 bytes.

Test procedure

a) The SS transmits two RLC SDUs of size UM_15_PayloadSize + 1 ~~220~~ bytes. In the third PDU for transmission, the SS sets the value of the second (padding) LI to 111111111111110.

b) The SS checks the length indicator sizes and values of any RLC PDUs returned on the uplink, and checks for the presence of any received RLC SDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 and invalid LI (=111111111111110)
5	→		UPLINK RLC PDU	SDU 1
6	→		UPLINK RLC PDU	SDU 1: Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.11.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the end of the SDU, and a padding LI.

The length and data content of the received SDU should be the same as the first transmitted SDU. The second SDU should not be returned.

7.2.2.12 ~~Segmentation~~ Reassembly / 15-bit Length Indicators / LI value > PDU size

7.2.2.12.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.12.2 Conformance requirement

If the length indicator of a PDU has a value that is larger than the PDU size – the number of octets containing LIs in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 clause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

If a PDU with sequence number < VR(US) is missing then all SDUs that have segments in this PDU shall be discarded.

Reference(s)

TS 25.322 clauses 11.2.4.2 and 11.2.3.

7.2.2.12.3 Test purpose

To test that PDUs with length indicators that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.2.12.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to UM_15_PayloadSize + 1 ~~220~~ bytes.

Test procedure

a) The SS transmits three RLC SDUs of size UM_15_PayloadSize + 1 ~~220~~ bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the length indicator to be UM_15_PayloadSize + 1 ~~161~~ (decimal).

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 & SDU 3, with bad LI
~~5~~	~~←~~		~~DOWNLINK RLC PDU~~	~~SDU 3~~
5~~6~~	←		DOWNLINK RLC PDU	SDU 3 and padding
6~~7~~	→		UPLINK RLC PDU	SDU 1
7~~8~~	→		UPLINK RLC PDU	SDU 1 and padding: Check Lis and re-assembled SDU
8~~9~~			RB RELEASE	Optional step

7.2.2.12.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the end of an SDU and an LI indicating that the remainder of the PDU contains padding.

The length and data content of the received SDU should be the same as the first transmitted SDU. No further SDUs or PDUs should be received.

7.2.2.13 ~~Segmentation~~ Reassembly / 15-bit Length Indicators / First data octet LI

7.2.2.13.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. A special LI is defined to indicate that the start of on SDU is coincident with the start of the PDU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.13.2 Conformance requirement

LI = 111111111111100, UMD PDU: The first data octet in this RLC PDU is the first octet of a RLC SDU.

Reference(s)

TS 25.322 clause 9.2.2.8.

7.2.2.13.3 Test purpose

To test that a UE in unacknowledged mode correctly handles a received RLC PDU with a 15-bit length indicator having its value equal to the special length indicator value 111111111111100.

7.2.2.13.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to 150 bytes.

Test procedure

a) The SS transmits a ~~normal~~ RLC SDU of size 150 bytes in a PDU which has the 'First Data Octet LI' as the first LI in the PDU.

b) The SS waits until the SDU has been received back from the UE, and then transmits another SDU of 150 bytes in a PDU which has the 'First Data Octet LI' as the first LI in the PDU.

c) The SS waits until this SDU has been received back from the UE.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1 with LI = 111111111111100
3			…	Wait for loopback
4	→		UPLINK RLC PDU	SDU 1
5	←		DOWNLINK RLC PDU	SDU 2 with LI = 111111111111100
6	→		UPLINK RLC PDU	SDU 2
7			RB RELEASE	Optional step

7.2.2.13.5 Test requirements

1. The UE shall return two RLC PDUs.

2. The length and data content of each received SDU should be the same as the transmitted SDU.

7.2.3 Acknowledged mode

7.2.3.1 General information for AM tests

A Two generic Radio Access Bearers is are provided for AM tests. This RAB is based upon the Stand-alone 3,4 kbps UL/DL Signalling RB, with an additional AM 3.4kbps path mapped to a DTCH. This logical channel is multiplexed on the same transport channel as the DCCH.

The AM test RAB is set up using the Generic Procedure described in clause 7.1.3 of TS 34.108, and with the default RAB replaced as follows shown in tables 7.2/3A and 7.23B:

- For AM 7-bit length indicator tests: the RB configuration described in 3G TS 34.108 clause 6.11.3 is used. For these tests, let AM_7_PayloadSize denote the RAB payload size in octets.
- For AM 15-bit length indicator tests: the RB configuration described in 3G TS 34.108 clause 6.11.4 is used. For these tests, let AM_15_PayloadSize denote the RAB payload size in octets.

Table 7.2/3A: RAB Configuration for AM testing (7-bit Lis)

Higher layer	RAB/signalling RB		**SRB#1**	**SRB#2**	**SRB#3**	**SRB#4**	**RAB #1**
	User of Radio Bearer		RRC	RRC	NAS_DT High prio	NAS_DT Low prio	User Plane
RLC	Logical channel type		DCCH	DCCH	DCCH	DCCH	DTCH
	RLC mode		UM	AM	AM	AM	AM
	Payload sizes, bit		136	128	128	128	128
	Max data rate, bps		3400	3200	3200	3200	3200
	AMD/UMD PDU header, bit		8	16	16	16	16
MAC	MAC header, bit		4	4	4	4	4
	MAC multiplexing		5 logical channel multiplexing				
Layer 1	TrCH type		DCH				
	TB sizes, bit		148				
	TFS	TF0, bits	0				
		TF1, bits	1x148				
	TTI, ms		40				
	Coding type		CC 1/3				
	CRC, bit		16				
	Max number of bits/TTI before rate matching		516				
	Uplink: Max number of bits/radio frame before rate matching		129				

Unless specified in individual test cases, the default RLC settings are given in table 7.2/13.

Table 7.2/13B: RLC Parameters for AM testing

Uplink RLC	
Transmission RLC discard	
Max DAT retransmissions	
Max_DAT	4
Transmission window size	128
Timer_RST	500
Max_RST	4
Polling info	
Timer_poll_prohibit	Disabled
Timer_poll	Disabled
Poll_PU	Disabled
Poll_SDU	Disabled
Last transmission PDU poll	TRUE
Last retransmission PDU poll	TRUE
Poll_Window	Disabled
Timer_poll_periodic	Disabled
Downlink RLC	
In-sequence delivery	TRUE
Receiving window size	128
Timer_Status_Prohibit	Disabled
Timer_EPC	Disabled
Missing PDU Indicator	TRUE
Timer_STATUS_periodic	Disabled

The AM test RABs is are used in all tests with the following exceptions:

- ~~Tests that only involve 15-bit length indicators;~~
- Tests that explicitly specify a different Radio Bearer configuration.

~~Tests that involve only 15-bit length indicators require a modified Radio Bearer configuration. To accommodate the larger payload size, these tests use a coded composite transport channel consisting of two DCH. The first DCH is specified as for the 7-bit length indicators, but not including the DTCH (RAB#1). This is shown in table 7.2/4A.~~

~~Table 7.2/4A: SRB Configuration for AM testing (15-bit Lis)~~

~~Higher layer~~	~~Signalling RB: **DCH 0**~~		~~**SRB#1**~~	~~**SRB#2**~~	~~**SRB#3**~~	~~**SRB#4**~~
	~~User of Radio Bearer~~		~~RRC~~	~~RRC~~	~~NAS_DT High prio~~	~~NAS_DT Low prio~~
~~RLC~~	~~Logical channel type~~		~~DCCH~~	~~DCCH~~	~~DCCH~~	~~DCCH~~
	~~RLC mode~~		~~UM~~	~~AM~~	~~AM~~	~~AM~~
	~~Payload sizes, bit~~		~~136~~	~~128~~	~~128~~	~~128~~
	~~Max data rate, bps~~		~~3400~~	~~3200~~	~~3200~~	~~3200~~
	~~AMD/UMD PDU header, bit~~		~~8~~	~~16~~	~~16~~	~~16~~
~~MAC~~	~~MAC header, bit~~		~~4~~	~~4~~	~~4~~	~~4~~
	~~MAC multiplexing~~		~~4 logical channel multiplexing~~			
~~Layer 1~~	~~TrCH type~~		~~DCH~~			
	~~TB sizes, bit~~		~~148~~			
	~~TFS~~	~~TF0, bts~~	~~0~~			
		~~TF1, bits~~	~~1x148~~			
	~~TTI, ms~~		~~40~~			
	~~Coding type~~		~~CC 1/3~~			
	~~CRC, bit~~		~~16~~			
	~~Max number of bits/TTI before rate matching~~		~~516~~			
	~~Uplink: Max number of bits/radio frame before rate matching~~		~~129~~			

~~This DCH is combined with a traffic DCH (at lower MAC priority) as described in table 7.2/4B.~~

Table 7.2/4B: RAB Configuration for AM testing (15-bit Lis)

Higher layer	RAB: **DCH 1**		**RAB**
RLC	Logical channel type		DTCH
	RLC mode		AM
	Payload sizes, bit		1280
	Max data rate, bps		64000
	AMD/UMD PDU header, bit		16
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		1296
	TFS	TF0, bits	0
		TF1, bits	1x1296
	TTI, ms		20
	Coding type		TC
	CRC, bit		16

All other settings are the same.

7.2.3.2 Segmentation and reassembly / Selection of 7 or 15 bit Length Indicators

7.2.3.2.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The selection of the size of the length indicator fields used must follow the specified rules. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.2.2 Conformance requirement

The size of the Length Indicator may be either 7 bits or 15 bits.

For AM, 7bit indicators shall be used if the AMD PDU size is ≤ l26 octets. Otherwise 15bit indicators shall be used.

The length of the Length Indicator only depends on the size of the largest RLC PDU. The length of the Length Indicator is always the same for all PUs, for one RLC entity.

Reference(s)

TS 25.322 clauses 9.2.2.8 and 9.2.2.9.

7.2.3.2.3 Test purpose

To test that if PDU carries a single PDU, and the size of the largetst PDU is £ ->≤ l26 octets, 7 bit indicators are used, otherwise, 15 bit indicators are used.

7.2.3.2.4 Method of test

Initial conditions

~~The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the following exceptions:~~

~~Higher layer~~	~~RAB/Signalling RB~~		~~RAB~~
~~RLC~~	~~Logical channel type~~		~~DTCH~~
	~~RLC mode~~		~~AM~~
	~~Payload sizes, bit~~		~~960~~
	~~Max data rate, bps~~		~~48000~~
	~~AMD PDU header, bit~~		~~16~~
~~MAC~~	~~MAC header, bit~~		~~0~~
	~~MAC multiplexing~~		~~N/A~~
~~Layer 1~~	~~TrCH type~~		~~DCH~~
	~~TB sizes, bit~~		~~976~~
	~~TFS~~	~~TF0, bits~~	~~0~~
		~~TF1, bits~~	~~1x976~~
	~~TTI, ms~~		~~20~~
	~~Coding type~~		~~TC~~
	~~CRC, bit~~		~~16~~

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to ~~4~~10 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 1~~8~~0 bytes. The PDU carrying this SDU is transmitted with a poll for status.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink.

c) The SS releases the RB, and performs the Radio Bearer establishment procedure (clause 7.1.3 of TS 34.108) with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in clause 7.2.3.1.~~reconfigures the Transport Channel as follows:~~

~~Higher layer~~	~~RAB/Signalling RB~~		~~RAB~~
~~RLC~~	~~Logical channel type~~		~~DTCH~~
	~~RLC mode~~		~~AM~~
	~~Payload sizes, bit~~		~~1280~~
	~~Max data rate, bps~~		~~64000~~
	~~AMD PDU header, bit~~		~~16~~
~~MAC~~	~~MAC header, bit~~		~~0~~
	~~MAC multiplexing~~		~~N/A~~
~~Layer 1~~	~~TrCH type~~		~~DCH~~
	~~TB sizes, bit~~		~~1296~~
	~~TFS~~	~~TF0, bits~~	~~0~~
		~~TF1, bits~~	~~1x1296~~
	~~TTI, ms~~		~~20~~
	~~Coding type~~		~~TC~~
	~~CRC, bit~~		~~16~~

All other settings the same.

d) The SS transmits an RLC SDUs of size ~~8~~10 bytes. The PDU carrying this SDU is transmitted with a poll for status.

e) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink.

f) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures for AM 7 bit LIs
2	←		DOWNLINK RLC PDU	1~~8~~0 byte SDU + padding + poll
3	→		UPLINK RLC PDU	140 byte SDU + piggy-backed status + poll
3a	→		*STATUS PDU*	*If piggy-backed status is not used in 3*
4	←		STATUS PDU	
5	←		~~TRANSPORT CHANNEL RECONFIGURATION~~RB RELEASE	~~PU size > 127 bytes~~
6			RB ESTABLISHMENT	See generic procedures for AM 7 bit LIs (AMD PDU size > 126 bytes)
7~~6~~	←		DOWNLINK RLC PDU	1~~8~~0 byte SDU + padding + poll
8~~7~~	→		UPLINK RLC PDU	140 byte SDU + piggy-backed status + poll
8~~7~~a	→		*STATUS PDU*	*If piggy-backed status is not used in 7*
9~~8~~	←		STATUS PDU	
10~~9~~			RB RELEASE	Optional step

7.2.3.2.5 Test requirements

The UE shall send 7 bit length indicators with values that correctly indicate the end of SDU in step b).

The UE shall send 15 bit length indicators with values that correctly indicate the end of SDU in step e).

7.2.3.3 Segmentation and Reassembly / 7-bit Length Indicators / Padding or Piggy-backed Status

7.2.3.3.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.3.2 Conformance requirement

The Length Indicator is used to indicate, each time, the end of an SDU occurs in the PU. The Length Indicator points out the number of octets between the end of the last Length Indicator field and up to and including the octet at the end of an SDU segment

A PDU that has unused space, to be referred to as padding, shall use a Length Indicator to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding Length Indicator must be placed after any Length Indicators for a PDU.

Upon reception of a SDU, RLC shall segment the SDU to fit into the fixed size of a PU. The segments are inserted in the data field of a PU. A length indicator shall be added to each PDU that includes a border of an SDU, i.e. if a PDU does not contain an LI, the SDU continues in the next PU. The length indicator indicates where the border occurs in the PU. The data after the indicated border can be either a new SDU, padding or piggybacked information. If padding or piggybacking is added another LI shall be added unless the padding size is one octet for PDUs with 15-bit LIs, see clauses 9.2.2.8 and 9.2.2.9.

Reference(s)

TS 25.322 clauses 9.2.2.8 and 11.3.2.1.2.

7.2.3.3.3 Test purpose

1. To test that a large SDU is correctly segmented and padding added at the end.

2. To test that a large SDU is received correctly, whether or not it has piggy-backed status at the end.

7.2.3.3.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to ~~17~~ AM_7_PayloadSize + 1 bytes.

Test procedure

a) The SS transmits an RLC SDU (SDU1) of size AM_7_PayloadSize + 1 ~~17~~ bytes, and polls the receiver for status.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS transmits another RLC SDU (SDU2) of size AM_7_PayloadSize + 1 bytes, and includes piggy-backed status in the second of the 2 PDUs sent. The SS also polls the receiver for status.

d) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

e~~c~~) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 +poll + Padding
4	→		UPLINK RLC PDU	No LI
5	→		UPLINK RLC PDU	Poll, Check ~~Lis~~ LIs and re-assembled SDU
5a	→		*STATUS PDU*	*If piggy-backed status is not used in 5*
6	←		DOWNLINK RLC PDU~~STATUS PDU~~	SDU 2
7	←		DOWNLINK RLC PDU	SDU 2 + poll + piggy-backed status
8	→		UPLINK RLC PDU	No LI
9	→		UPLINK RLC PDU	Poll, Check LIs and re-assembled SDU
9a	→		*STATUS PDU*	*If piggy-backed status is not used in 9*
10	←		STATUS PDU	
11~~7~~			RB RELEASE	Optional step

7.2.3.3.5 Test requirements

1. In steps 4 and 5, ~~T~~the UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.

2. In steps 8 and 9, the UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.

3. The length and data content of ~~the~~all received SDUs ~~should~~ shall be the same as the transmitted SDUs.

7.2.3.4 Segmentation and Reassembly / 7-bit Length Indicators / LI = 0

7.2.3.4.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. A pre-defined length indicator value is used to indicate when an SDUs ends coincident with the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.4.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an LI field, an LI field set to only 0's shall be included as the first length indicator in the following PDU.

Reference(s)

TS 25.322 clause 11.3.2.1.

7.2.3.4.3 Test purpose

1. To test that where an SDU exactly fills a PDU, an LI of value zero is placed by the transmitter as the first LI in the next PDU.

2. To test that where an SDU exactly fills a PDU, and an LI of value zero is the first LI in the next PDU, the receiver correctly reassembles the SDU.

7.2.3.4.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to ~~16~~ AM_7_PayloadSize bytes.

Test procedure

a) The SS transmits an RLC SDU of size ~~32~~ 2 * AM_7_PayloadSize bytes. The SS polls the receiver for status in the last RLC PDU sent.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0, poll and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	(Poll) Check Lis and re-assembled SDU
6a	→		*STATUS PDU*	*If piggy-backed status is not used in 6*
7	←		STATUS PDU	
8			RB RELEASE	Optional step

7.2.3.4.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU exactly filled the previous PU, and an LI indicating either that the remainder of the PDU contains padding, or that it contains a piggy-backed STATUS PDU.

The length of the received SDU should be AM_7_PayloadSize ~~16~~ bytes, and the data content the same as the first AM_7_PayloadSize ~~16~~ bytes of the transmitted SDU.

7.2.3.5 ~~Segmentation~~ Reassembly / 7-bit Length Indicators / Reserved LI value

7.2.3.5.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of a reserved LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.5.2 Conformance requirement

Upon reception of an AMD PDU that contains Length Indicator value "1111100" or "1111101": PDUs with this coding will be discarded by this version of the protocol.

Reference(s)

TS 25.322 clause 9.2.2.8.

7.2.3.5.3 Test purpose

To test that PDUs with reserved length indicators are discarded by the receiving RLC.

7.2.3.5.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Missing PDU Indicator	FALSE

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits ~~two~~ three RLC SDUs of size ~~24~~ AM_7_PayloadSize + 1 bytes. In the second PDU, the SS sets the value of the LI to 1111100. In the ~~fourth~~ third PDU for transmission, the SS sets the value of the second (padding) LI to 1111101.

b) The SS waits to receive a status report from the UE.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	SDU 1
3	←		DOWNLINK RLC PDU #1	SDU 1 + SDU 2, LI = 1111100
4	←		DOWNLINK RLC PDU #2	SDU 2 + SDU 3, LI = 1111101
5	←		DOWNLINK RLC PDU #3	SDU 3~~2~~ + poll~~, second LI =1111101~~
6	→		STATUS PDU	Nack PDUs 1 and ~~3~~2
7			RB RELEASE	Optional step

7.2.3.5.5 Test requirements

1. The UE shall return a STATUS PDU indicating that PDUs with sequence numbers 1 and ~~3~~ 2 were incorrectly received.

2. No uplink SDUs shall be received.

7.2.3.6 ~~Segmentation~~ Reassembly / 7-bit Length Indicators / LI value > PDU size

7.2.3.6.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.6.2 Conformance requirement

If the length indicator of a PDU has a value that is larger than the PDU size – the number of octets containing LIs in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 clause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

Reference(s)

TS 25.322 clause 11.3.4.5.

7.2.3.6.3 Test purpose

To test that PDUs with length indicators that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.3.6.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Missing PDU Indicator	 FALSE

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits three RLC SDUs of size ~~22~~ AM_7_PayloadSize + 1 bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the length indicator to be AM_7_PayloadSize + 1 ~~17~~ (decimal).

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the content of the received STATUS PDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	SDU 1
3	←		DOWNLINK RLC PDU #1	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU #2	SDU 2 & SDU 3, with bad LI
~~5~~	~~←~~		~~DOWNLINK RLC PDU #3~~	~~SDU 3~~
5~~6~~	←		DOWNLINK RLC PDU #3~~4~~	SDU 3, poll and padding
6~~7~~	→		STATUS PDU	Nack PDU #2
7~~8~~			RB RELEASE	Optional step

7.2.3.6.5 Test requirements

The UE shall indicate that the PDU with sequence number 2 was not received ~~correctly~~.

7.2.3.7 Segmentation and Reassembly / 15-bit Length Indicators / Padding or Piggy-backed Status

7.2.3.7.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.7.2 Conformance requirement

The Length Indicator is used to indicate, each time, the end of an *S*DU occurs in the PU. The Length Indicator points out the number of octets between the end of the last Length Indicator field and up to and including the octet at the end of an SDU segment

A PDU that has unused space, to be referred to as padding, shall use a Length Indicator to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding Length Indicator must be placed after any Length Indicators for a PDU.

Upon reception of a SDU, RLC shall segment the SDU to fit into the fixed size of a PDU. The segments are inserted in the data field of a PDU. A length indicator shall be added to each PDU that includes a border of an SDU, i.e. if a PDU does not contain an LI, the SDU continues in the next PU. The length indicator indicates where the border occurs in the PU. The data after the indicated border can be either a new SDU, padding or piggybacked information. If padding or piggybacking is added another LI shall be added unless the padding size is one octet for PDUs with 15-bit LIs, see clauses 9.2.2.8 and 9.2.2.9.

Reference(s)

TS 25.322 clauses 9.2.2.8 and 11.3.2.1.2.

7.2.3.7.3 Test purpose

1. To test that a large SDU is correctly segmented and padding added at the end.

2. To test that a large SDU is received correctly, whether or not it has piggy-backed status at the end.

7.2.3.7.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to ~~161~~ AM_15_PayloadSize + 1 bytes.

Test procedure

a) The SS transmits an RLC SDU (SDU1) of size AM_15_PayloadSize + 1 ~~161~~ bytes, and polls the receiver for status.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS transmits another RLC SDU (SDU2) of size AM_15_PayloadSize + 1 bytes, and includes piggy-backed status in the second of the 2 PDUs sent. The SS also polls the receiver for status.

d) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

e~~c~~) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 +poll + Padding
4	→		UPLINK RLC PDU	No LI
5	→		UPLINK RLC PDU	Poll, Check ~~Lis~~ LIs and re-assembled SDU
5a	→		*STATUS PDU*	*If piggy-backed status is not used in 5*
6	←		DOWNLINK RLC PDU~~STATUS PDU~~	SDU 2
7	←		DOWNLINK RLC PDU	SDU 2 + poll + piggy-backed status
8	→		UPLINK RLC PDU	No LI
9	→		UPLINK RLC PDU	Poll, Check LIs and re-assembled SDU
9a	→		*STATUS PDU*	*If piggy-backed status is not used in 9*
10	←		STATUS PDU	
~~7~~11			RB RELEASE	Optional step

7.2.3.7.5 Test requirements

1. In steps 4 and 5, the ~~The~~ UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.

2. In steps 8 and 9, the UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.

3. The length and data content of ~~the~~all received SDUs shall~~should~~ be the same as the transmitted SDUs.

7.2.3.8 Segmentation and Reassembly / 15-bit Length Indicators / LI = 0

7.2.3.8.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. A pre-defined length indicator value is used to indicate when an SDUs ends coincident with the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.8.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an LI field, an LI field set to only 0's shall be included as the first length indicator in the following PDU.

Reference(s)

TS 25.322 clause 11.3.2.1.

7.2.3.8.3 Test purpose

1. To test that where an SDU exactly fills a PDU, an LI of value zero is placed by the transmitter as the first LI in the next PDU.

2. To test that where an SDU exactly fills a PDU, and an LI of value zero is the first LI in the next PDU, the receiver correctly reassembles the SDU.

7.2.3.8.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to AM_15_PayloadSize ~~160~~ bytes.

Test procedure

a) The SS transmits an RLC SDU of size ~~320~~ 2 * AM_15_PayloadSize bytes. The SS polls the receiver for status in the last RLC PDU sent.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0, poll and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	(Poll) Check Lis and re-assembled SDU
6a	→		*STATUS PDU*	*If piggy-backed status is not used in 6*
7	←		STATUS PDU	
8			RB RELEASE	Optional step

7.2.3.8.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU exactly filled the previous PU, and an LI indicating either that the remainder of the PDU contains padding, or that it contains a piggy-backed STATUS PDU.

The length of the received SDU should be AM_15_PayloadSize ~~160~~ bytes, and the data content the same as the first AM_15_PayloadSize ~~160~~ bytes of the transmitted SDU.

7.2.3.9 Segmentation and reassembly / 15-bit Length Indicators / One octet short LI

7.2.3.9.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. A pre-defined length indicator value is used to indicate when an SDUs ends one octet short of the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.9.2 Conformance requirement

In the case where the last segment of an RLC SDU is one octet short of exactly filling the last RLC PU, and 15-bit Length Indicators are used, the next Length Indicator shall be placed as the first Length Indicator in the next PDU and have value LI=111 1111 1111 1011.

In the case where a PDU contains a 15-bit LI indicating that an SDU ends with one octet left in the PDU, the last octet of this PDU shall be ignored and shall not be filled with the first octet of the next SDU data.

Reference(s)

TS 25.322 clause 9.2.2.8.

7.2.3.9.3 Test purpose

1. To test that where the UE transmits an SDU, which is one byte short of filling a PDU, an LI indicating one byte short is placed as the first LI in the next PDU.

2. To test that where the UE correctly handles a received PDU containing an LI indicating that an SDU ended one byte short of the end of the previous PDU.

7.2.3.9.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to AM_15_PayloadSize – 1 ~~159~~ bytes.

Test procedure

a) The SS transmits an RLC SDU of size ~~319~~ (2 * AM_15_PayloadSize) - 1 bytes. The SS polls the receiver for status in the last RLC PDU sent.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=111 1111 1111 1011, poll and padding
5	→		UPLINK RLC PDU	No LIs
6	→		UPLINK RLC PDU	(Poll) Check LIs and re-assembled SDU
6a	→		*STATUS PDU*	*If piggy-backed status is not used in 6*
7	←		STATUS PDU	
8			RB RELEASE	Optional step

7.2.3.9.5 Test requirements

1. The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have 2 LIs. The first LI shall be an LI indicating that the SDU was one byte short of filling the previous PDU, and the second an LI indicating that the remainder of the PDU contains padding.

2. The length of the received SDU should be AM_15_PayloadSize - 1 ~~159~~ bytes, and the data content the same as the first AM_15_PayloadSize - 1 ~~159~~ bytes of the transmitted SDU.

7.2.3.10 ~~Segmentation~~ Reassembly / 15-bit Length Indicators / Reserved LI value

7.2.3.10.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of a reserved LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.10.2 Conformance requirement

Upon reception of an AMD PDU that contains Length Indicator value "111111111111100" or "111111111111101": PDUs with this coding will be discarded by this version of the protocol.

Reference(s)

TS 25.322 clause 9.2.2.8.

7.2.3.10.3 Test purpose

To test that PDUs with reserved length indicators are discarded by the receiving RLC.

7.2.3.10.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Missing PDU Indicator	FALSE

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits ~~two~~ three RLC SDUs of size ~~240~~ AM_15_PayloadSize + 1 bytes. In the second PDU, the SS sets the value of the LI to 111111111111100. In the ~~fourth~~ third PDU for transmission, the SS sets the value of the second (padding) LI to 111111111111101.

b) The SS waits to receive a status report from the UE.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	SDU 1
3	←		DOWNLINK RLC PDU #1	SDU 1 + SDU 2, LI = 111111111111100
4	←		DOWNLINK RLC PDU #2	SDU 2 + SDU 3, LI = 111111111111101
5	←		DOWNLINK RLC PDU #3	SDU ~~2~~ 3 + poll~~, second LI =111111111111101~~
6	→		STATUS PDU	Nack PDUs 1 and ~~2~~3
7			RB RELEASE	Optional step

7.2.3.10.5 Test requirements

1. The UE shall return a STATUS PDU indicating that PDUs with sequence numbers 1 and ~~2~~3 were incorrectly received.

2. No uplink SDUs shall be received.

7.2.3.11 ~~Segmentation~~ Reassembly / 15-bit Length Indicators / LI value > PDU size

7.2.3.11.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.11.2 Conformance requirement

If the length indicator of a PDU has a value that is larger than the PDU size – the number of octets containing LIs in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 clause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

Reference(s)

TS 25.322 clause 11.3.4.5.

7.2.3.11.3 Test purpose

To test that PDUs with length indicators that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.3.11.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Missing PDU Indicator	 FALSE

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits three RLC SDUs of size ~~230~~ AM_15_PayloadSize + 1 bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the length indicator to be AM_15_PayloadSize + 1 ~~161~~ (decimal).

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the content of the received STATUS PDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	SDU 1
3	←		DOWNLINK RLC PDU #1	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU #2	SDU 2 & SDU 3, with bad LI
~~5~~	~~←~~		~~DOWNLINK RLC PDU #3~~	~~SDU 3~~
5~~6~~	←		DOWNLINK RLC PDU #4	SDU 3, poll and padding
6~~7~~	→		STATUS PDU	Nack PDU #2
7~~8~~			RB RELEASE	Optional step

7.2.3.11.5 Test requirements

The UE shall indicate that the PDU with sequence number 2 was not received ~~correctly~~.

7.2.3.12 Correct use of Sequence Numbering

7.2.3.12.1 Definition

Peer RLC entities use sequence numbering to detect missing PDUs, and for flow control purposes. Incorrect operation of sequence numbering will result in failure of the UE to communicate.

7.2.3.12.2 Conformance requirement

PDUs are sequentially and independently numbered and may have the value 0 through n minus 1 (where n is the modulus of the sequence numbers). The modulus equals 2^{12} for AM …; the sequence numbers cycle through the entire range: 0 through $2^{12} – 1$ for AM.

If the PDU is transmitted for the first time, the Sequence Number field shall be set equal to VT(S) and VT(S) shall be updated

Reference(s)

TS 25.322, clauses 9.4 and 11.3.2.1.

7.2.3.12.3 Test purpose

1. To verify that the UE transmits the first PDU with the Sequence Number field equal to 0.
2. To verify that the UE increments the Sequence Number field according to the number of PDUs transmitted.
3. To verify that the UE wraps the Sequence Number after transmitting the 2^{12}-1th PDU.
4. To verify that the UE receiver accepts PDUs with SNs that wrap around every 2^{12}-1th PDU.

7.2.3.12.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission window size	4095~~6~~
Downlink RLC Receiving window size	4095~~6~~

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to ~~31~~ (2 * AM_7_PayloadSize) - 1 bytes.

Test procedure

a) The SS sends 2049 RLC SDUs to the UE, each of (2 * AM_7_PayloadSize) - 1 ~~31~~ bytes. The SS polls for status on each 128th RLC PDU and the last PDU transmitted

b) The SS checks the sequence numbers of the RLC PDUs it receives in the uplink

c) The SS checks the content of the SDUs it receives from the UE.

d) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	
3	←		DOWNLINK RLC PDU #1	
			…	Transmission of DOWNLINK PDUs continues
4	→		UPLINK RLC PDU	SN should be set to 0
5	→		UPLINK RLC PDU	SN should be set to 1
	←		…	Transmission of DOWNLINK PDUs continues to SN = 127
6	←		DOWNLINK RLC PDU #127	Poll
7	→		UPLINK STATUS PDU	
	←		…	Transmission of DOWNLINK PDUs continues, polling every 128th PDU, to SN = 4095
	→		…	~~Transfer of RLC PDUs continues to SN = 4 095~~
~~6~~8	←		DOWNLINK RLC PDU #4095	
~~7~~9	←		DOWNLINK RLC PDU #~~0~~4096	SN=0
~~8~~10	←		DOWNLINK RLC PDU #~~1~~4097	SN=1, Poll
	→		…	Transfer of RLC PDUs continues to SN = 4 095
~~9~~11	→		UPLINK RLC PDU	SN should be set to 4095
~~10~~12	→		UPLINK RLC PDU	SN should be set to 0
~~11~~13	→		UPLINK RLC PDU	SN should be set to 1, Poll
14	←		DOWNLINK STATUS PDU	
~~12~~15			RB RELEASE	Optional step

7.2.3.12.5 Test requirements

1. The first PDU received should have the SN field set to 0. The second PDU should have the SN field set to 1, and the 4 097th PDU should have the SN field set to 0.

2. The size and data content of the received SDUs shall match those of the transmitted SDUs.

7.2.3.13 Control of Transmit Window

7.2.3.13.1 Definition

This test is to check that the UE is able to correctly control its RLC transmission window. Correct operation of RLC windowing is critical for acknowledged mode operation.

7.2.3.13.2 Conformance requirement

The transmitter shall not transmit a PDU with SN $\geq$ VT(MS).

The receiver is always allowed to change the Tx window size of the peer entity during a connection, but the minimum and the maximum allowed value is given by RRC configuration. The Rx window of the receiver is not changed.

Reference(s)

TS 25.322, clauses 9.2.2.11.3 and 9.4.

7.2.3.13.3 Test purpose

To verify that the UE does not transmit PDUs with sequence numbers outside of the transmit window, even when the transmit window size is changed by the receiver.

7.2.3.13.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission window size	 8
~~Downlink RLC~~ ~~Missing PDU Indicator~~ ~~Receiving window size~~	 ~~FALSE~~ ~~8~~

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let W be the size of the transmit window.

The length of all transmitted SDUs is set to AM_7_PayloadSize - 1 ~~15~~ bytes.

a) The SS transmits 3*W RLC SDUs to the UE~~, polling regularly~~.

b) The SS checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit STATUS PDUs for any other reason.

c) After confirming that the UE has stopped transmitting new RLC SDUs for at least (2*W*TTI) ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far.

d) The SS again checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit further STATUS PDUs for any other reason.

e) After confirming that the UE has again stopped transmitting new RLC SDUs for at least (2*W*TTI) ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far, and containing a WINDOW command to reduce the UE transmit window size (W) to half its initial size.

f) The SS checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit STATUS PDUs for any other reason.

g) After confirming that the UE has stopped transmitting new RLC SDUs for at least (2*W*TTI) ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far.

h) The SS checks the RLC SDUs received on the uplink.

i) The SS may optionally release the radio bearer.

NOTE: Window arithmetic is carried out modulo 4096.

The test procedure is run with the window transmit window size set to the default (8), and the repeated with the transmit window size set to 1536.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		DOWNLINK RLC PDU	SDU 3
5	←		DOWNLINK RLC PDU	SDU 4
6	←		…	SS continues to transmit RLC SDUs
7	←		DOWNLINK RLC PDU	SDU 3W
8	→		UPLINK RLC PDU	SDU 1
9	→		UPLINK RLC PDU	SDU 2
10	→		…	SS continues to receive RLC SDUs
11	→		UPLINK RLC PDU	SDU W
12				No new transmissions from UE
13	←		STATUS PDU	
14	→		UPLINK RLC PDU	SDU W+1
15	→		UPLINK RLC PDU	SDU W+2
16	→		…	SS continues to receive RLC SDUs
17	→		UPLINK RLC PDU	SDU 2W
18				No new transmissions from UE
19	←		STATUS PDU	WINDOW = W/2
20	→		UPLINK RLC PDU	SDU 2W+1
21	→		UPLINK RLC PDU	SDU 2W+2
22	←		…	SS continues to receive RLC SDUs
23	→		UPLINK RLC PDU	SDU 2W + W/2
24				No new transmissions from UE
25	←		STATUS PDU	
26	→		UPLINK RLC PDU	SDU 2W+W/2+1
27	→		UPLINK RLC PDU	SDU 2W+W/2+2
28	←		…	SS continues to receive RLC SDUs
29	→		UPLINK RLC PDU	SDU 3W
30			RB RELEASE	Optional step
NOTE: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.				

7.2.3.13.5 Test requirements

From steps 8 to 11, the SDU contents reassembled from the uplink shall match those of the first W transmitted SDUs.

At step 12 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of the last transmitted PDU.

After step 13, the UE shall resume transmission of the next W SDUs. The contents of these SDUs shall match those of SDUs W+1 to 2*W sent on the downlink.

At step 18 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of the last transmitted PDU.

After step 19, the UE shall resume transmission of the next W/2 SDUs. The contents of these SDUs shall match those of SDUs 2*W+1 to 2*W+W/2 sent on the downlink.

At step 24 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of the last transmitted PDU.

After step 25, the UE shall resume transmission of the next W/2 SDUs. The contents of these SDUs shall match those of SDUs 2*W+W/2+1 to 3*W sent on the downlink.

7.2.3.14 Control of Receive Window

7.2.3.14.1 Definition

This test is to check that the UE is able to correctly control its RLC receive window. Correct operation of RLC windowing is critical for acknowledged mode operation.

This test applies to all UE.

7.2.3.14.2 Conformance requirement

Upon reception of a PDU with SN<VR(R) or SN≥VR(MR) the receiver shall discard the PDU.

Reference(s)

TS 25.322, clause 11.3.4.2.

7.2.3.14.3 Test purpose

1. To verify that the UE discards PDUs with sequence numbers outside the upper boundary of the receive window.

7.2.3.14.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission window size	 8
Downlink RLC Missing PDU Indicator Receiving window size	 FALSE 8

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let W be the size of the receive window.

The length of all transmitted SDUs is set to AM_7_PayloadSize - 1 ~~15~~ bytes.

a) The SS transmits W RLC SDUs to the UE, polling only on the last RLC PDU.

b) The SS checks the RLC SDUs received on the uplink, and after receiving the STATUS PDU from the UE it transmits a further RLC SDU. The SS sets the sequence number for the associated RLC PDU above the top of the receive window, for example, 2*W+1.

c) The SS transmits a further RLC SDU with the sequence number set to the value of the next sequence number within the receive window.

d) The SS checks the RLC SDUs received on the uplink.

e) The SS may optionally release the radio bearer.

This test case is run once for the default receive window size (8) and again with the receive window size set to 1536.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1, SN = 0
3	←		DOWNLINK RLC PDU	SDU 2, SN = 1
4	←		…	SS continues to transmit RLC SDUs
5	←		DOWNLINK RLC PDU	SDU W + Poll, SN = W-1
6	→		STATUS PDU	
7	→		UPLINK RLC PDU	SDU 1
8	→		UPLINK RLC PDU	SDU 2
9			…	UE continues to transmit RLC SDUs
10	→		UPLINK RLC PDU	SDU W
11	←		DOWNLINK RLC PDU	SDU W+1, SN = 2W+1
12	←		DOWNLINK RLC PDU	SDU W+2, SN = W~~+1~~
13	→		UPLINK RLC PDU	SDU W+2
14			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.14.5 Test requirements

1. The SS shall receive back SDUs 1 to W, and SDU W + 2 only. No other SDUs shall be looped back.

7.2.3.15 Polling for status / Last PDU in transmission queue

7.2.3.15.1 Definition

This case tests that the UE will poll for a status request on the last PDU in its transmission queue when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.15.2 Conformance requirement

The Polling bit shall be set to 1 if any of following conditions are fulfilled except when the poll prohibit function is used and the timer Timer_Poll_Prohibit is active:

1. Last PDU in buffer is used and the last PDU available for transmission is transmitted.

Reference

TS 25.322 clause 11.3.2.1.1.

7.2.3.15.3 Test purpose

1. To verify that a poll is performed when only one PDU is available for transmission, and the poll prohibit timer is function is not used.

2. To verify that a poll is performed when only one PDU is available for transmission, and the poll prohibit timer is function is used, but inactive.

7.2.3.15.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Timer_poll_prohibit	disabled	200
Last transmission PDU poll	TRUE	TRUE
Last retransmission PDU poll	FALSE	FALSE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to ~~31~~ (2 * AM_7_PayloadSize) - 1 bytes.

Test procedure

a) The SS transmits an RLC SDU of length ~~63~~ (4 * AM_7_PayloadSize) - 1 bytes to the UE.

b) The SS checks the uplink RLC PDUs for a poll for status flag.

c) The SS may optionally release the radio bearer.

The test is repeated using the RLC parameters given in the Second run column of the configuration table for the initial conditions.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	SDU 1
5	←		DOWNLINK RLC PDU	SDU 1 + Poll
6	→		STATUS PDU	
7	→		UPLINK RLC PDU	SDU 1
8	→		UPLINK RLC PDU	SDU 1 + Poll
9	←		STATUS PDU	
10			RB RELEASE	Optional step

7.2.3.15.5 Test requirements

The Poll bit shall be set in the AMD PDU header of the PDU returned in step 8.

7.2.3.16 Polling for status / Last PDU in retransmission queue

7.2.3.16.1 Definition

This case tests that the UE will poll for a status request on the last PDU in its retransmission queue when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.16.2 Conformance requirement

The Polling bit shall be set to 1 if any of following conditions are fulfilled except when the poll prohibit function is used and the timer Timer_Poll_Prohibit is active:

1) …

2) Last PDU in retransmission buffer is used and the last PDU to be retransmitted is transmitted.

Reference

25.322 clause 11.3.2.1.1.

7.2.3.16.3 Test purpose

1. To verify that a poll is performed when only one PDU is available for retransmission, and the poll prohibit timer is function is not used.

2. To verify that a poll is performed when only one PDU is available for retransmission, and the poll prohibit timer is function is used, but inactive.

7.2.3.16.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Timer_poll_prohibit	disabled	200
Last transmission PDU poll	FALSE	FALSE
Last retransmission PDU poll	TRUE	TRUE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to ~~31~~ (2 * AM_7_PayloadSize) - 1 bytes.

Test procedure

a) The SS transmits an RLC SDU of length ~~63~~ (4 * AM_7_PayloadSize) - 1 bytes to the UE.

b) The SS checks the uplink RLC PDUs for a poll for status flag.

c) The SS transmits a STATUS PDU negatively acknowledging the first uplink RLC PDU~~s~~ as missing.

d) The SS waits for the RLC PDU~~s~~ to be retransmitted and then checks the uplink RLC PDU~~s~~ for a poll for status flag.

e) The SS may optionally release the radio bearer.

The test is repeated using the RLC parameters given in the Second run column of the configuration table for the initial conditions.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	SDU 1
5	←		DOWNLINK RLC PDU	SDU 1 + Poll
6	→		STATUS PDU	
7	→		UPLINK RLC PDU	SDU 1, SN=0
8	→		UPLINK RLC PDU	SDU 1, SN=1
9	←		STATUS PDU	NAK: SN=0 ~~and SN=1~~
10	…			Wait for retransmission
~~11~~	~~→~~		~~UPLINK RLC PDU~~	~~SDU 1~~
~~12~~11	→		UPLINK RLC PDU	SDU 1, SN=0 + Poll
~~13~~12	←		STATUS PDU	
~~14~~13			RB RELEASE	Optional step

7.2.3.16.5 Test requirements

The Poll bit shall be set in the AMD PDU header of the PDU returned in step ~~12~~11.

7.2.3.17 Polling for status / Poll every Poll_PDU PDUs

7.2.3.17.1 Definition

This case tests that the UE will poll for a status request every Poll_PDU PDUs when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.17.2 Conformance requirement

VT(PDU) should be incremented for both new and retransmitted PDUs. When it reaches Poll_PDU a new poll is transmitted and the state variable is set to zero.

The Polling bit shall be set to 1 if … Every Poll_PDU PDU is used and when VT(PDU)=Poll_PDU

Reference

TS 25.322 clauses 9. 4, 9.6 and 11.3.2.1.1.

7.2.3.17.3 Test purpose

1. To verify that a poll is performed when VT(PDU) reaches Poll_PDU.
2. To verify VT(PDU) is incremented for both new and retransmitted PDUs.

7.2.3.17.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Polling info	
Poll_PDU	4
Last transmission PDU poll	FALSE
Last retransmission PDU poll	FALSE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let the value of Poll_PDU be P:

a) The SS sends 3 * P - 2 RLC SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes to the UE in PDUs with sequence numbers that are contiguous, starting from zero.

b) The SS checks the sequence numbers and polling bits of the RLC SDUs returned on the uplink.

c) The SS sends a STATUS PDU negatively acknowledging two RLC PDUs with a sequence numbers of already received PDUs. The other PDUs are acknowledged as received correctly.

d) The SS checks the sequence numbers and polling bits of the RLC SDUs returned on the uplink.

e) The SS terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 2
3	←		…	SS continues to transmit RLC SDUs
4	←		DOWNLINK RLC PDU	SDU 3P – 2
5	→		UPLINK RLC PDU	SDU 1
6	→		UPLINK RLC PDU	SDU 2
7	→		…	SS continues to receive RLC SDUs
8	→		UPLINK RLC PDU	SDU P, Poll
9	←		STATUS PDU	NAK SN=0 and SN=1
10	→		UPLINK RLC PDU	SDU 1
11	→		UPLINK RLC PDU	SDU 2
12	→		UPLINK RLC PDU	SDU P+1
13	→		…	SS continues to receive RLC SDUs
14	→		UPLINK RLC PDU	SDU 2P – 2, Poll
15	→		…	SS continues to receive RLC SDUs
16	→		UPLINK RLC PDU	SDU 3P – 2, Poll
17			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.17.5 Test requirements

The SS shall receive a poll for status in the RLC PDUs sent on the uplink in steps 8, 14 and 16 above.

7.2.3.18 Polling for status / Poll every Poll_SDU SDUs

7.2.3.18.1 Definition

This case tests that the UE will poll for a status request every Poll_SDU SDUs when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.18.2 Conformance requirement

The state variable VT(SDU) is used when the poll every Poll_SDU SDU function is used. It is incremented with 1 for each SDU that is transmitted. When it reaches Poll_SDU a new poll is transmitted and the state variable is set to zero. The poll bit should be set in the PDU that contains the last segment of the SDU. The initial value of this variable is 0.

The Polling bit shall be set to 1 if … Every Poll_SDU is used and VT(SDU)=Poll_SDU and the PDU contains the last segment that SDU

Reference

TS 25.322 clauses 9. 4, 9.6 and 11.3.2.1.1.

7.2.3.18.3 Test purpose

1. To verify that a poll is performed when VT(SDU) reaches Poll_ SDU.
2. To verify that the poll is sent in the last PDU of the SDU.

7.2.3.18.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Polling info	
Last transmission PDU poll	FALSE
Poll_SDU	1

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to ~~63~~ (4 * AM_7_PayloadSize) - 1 bytes.

Let the value of Poll_SDU be P.

a) The SS sends 2 * P RLC SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes to the UE in PDUs with sequence numbers that are contiguous, starting from zero.

b) The SS checks the sequence numbers and polling bits of the RLC SDUs returned on the uplink.

c) The SS terminates the connection.

The test is repeated with Poll_SDU set to 64.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	DOWNLINK RLC PDU	SDU 2
3		←	…	SS continues to transmit RLC SDUs
4		←	DOWNLINK RLC PDU	SDU 2P
5	→		UPLINK RLC PDU	SDU 1 Expanded to ~~63~~ (4 *
6	→		UPLINK RLC PDU	AM_7_PayloadSize) - 1 bytes by test function
7	→		…	SS continues to receive RLC SDUs
8	→		UPLINK RLC PDU	SDU P, Poll
9		←	STATUS PDU	
10	→		UPLINK RLC PDU	SDU P+1 Expanded to (4 *
11	→		UPLINK RLC PDU	AM_7_PayloadSize) - 1 ~~63~~ bytes by test function
12	→		…	SS continues to receive RLC SDUs
13	→		UPLINK RLC PDU	SDU 2P, Poll
14			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.18.5 Test requirements

The UE shall return uplink PDUs that contain polls for status in sequence numbers 4 * P – 1 and 8 * P – 1. No other PDUs should poll for status.

7.2.3.19 Polling for status / Timer triggered polling (Timer_Poll_Periodic)

7.2.3.19.1 Definition

This case tests that the UE will poll for a status request every Timer_Poll_Periodic ms when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.19.2 Conformance requirement

Each time the timer expires, the timer is restarted and a poll is triggered (either by the transmission of a PDU which was not yet sent, or by a retransmission). If there is no PDU to be transmitted and all PDUs have already been acknowledged, a poll shall not be triggered and the timer shall only be restarted. The value of the timer is signalled by RRC.

The Polling bit shall be set to 1 if … timer based polling is used and Timer_Poll_Periodic has expired.

Reference

TS 25.322 clauses 9.5 and 11.3.2.1.1.

7.2.3.19.3 Test purpose

1. To verify that the UE polls the SS in the next PDU to be transmitted or retransmitted each time the Timer_Poll_Periodic timer expires.
2. To verify that if there is no PDU to be transmitted, and all the PDUs have already been acknowledged, the timer is restarted, but no poll is sent.

7.2.3.19.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Last transmission PDU poll	FALSE	FALSE
Timer_poll_periodic	100	2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let T be the value of Timer_Poll_Periodic:

a) The SS waits for at least 2*T ms before starting any transmissions, and monitors the uplink.

b) The SS sends T * 0.1 RLC SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes to the UE.

c) The SS waits for the first PDU to be received with the P bit set, records the arrival time (T_1) and responds with a STATUS PDU normally.

d) The SS waits for the reception of the next PDU with the P bit set, records the arrival time (T_2), and then transmits a STATUS PDU reporting that none of the ~~unacknowledged~~ uplink PDUs were correctly received, except for the PDU with SN= ceil(2T/TTI) which is acknowledged.

e) The SS waits for the next PDU received with the P bit set, and records the arrival time (T_3).

f) The SS waits for the reception of the next PDU with the P bit set and records the arrival time (T_4).

g) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU 0.1T
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = ceil(T/TTI), Poll: Note T_1
8	←		STATUS PDU	ACK SN 0 to SN ceil(T/TTI)
9	→		UPLINK RLC PDU	SN = ceil(T/TTI)+1
10	→		…	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	SN = ceil(2T/TTI), Poll: Note T_2
12	←		STATUS PDU	NAK SN ceil(T/TTI)+1 to SN ceil(2T/TTI)-1
13	→		UPLINK RLC PDU	PDUs including some retransmissions
14	→		UPLINK RLC PDU	
15	→		…	SS continues to receive RLC PDUs
16	→		UPLINK RLC PDU	Poll: Note T_3
17	←		STATUS PDU	Normal
18	→		…	SS continues to receive RLC PDUs
19	→		UPLINK RLC PDU	Poll: Note T_4
20			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.19.5 Test requirements

Time $T_2 - T_1$ should be T~~ ± TTI ms~~.

Time $T_3 - T_2$ should be T.

Time $T_4 - T_3$ should be T~~ ± TTI ms~~.

7.2.3.20 Polling for status / Polling on Poll_Window% of transmission window

7.2.3.20.1 Definition

This case tests that the UE will poll for a status request when it has reached Poll_Window% of the transmission window, when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

This test applies to all UE.

7.2.3.20.2 Conformance requirement

The Polling bit shall be set to 1 if … Window based polling is used, , and J≥Poll_Window, where J is:

J ≥ Poll_Window, where J is the window transmission percentage defined by

$$J = \frac{(4096+VT(S) - VT(A)) \textbf{ mod } 4096}{VT(WS)} * 100 ,$$

where the constant 4096 is the modulus for AM described in 3GPP TS 25.322 clause 9.4.

Reference

25.322 clauses 9.6 and 11.3.2.1.1.

7.2.3.20.3 Test purpose

1. To verify that the UE polls the SS once the window based polling equation is satisfied.

7.2.3.20.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Polling info	
Last transmission PDU poll	FALSE
Poll_Window	50
Transmission window size	8
Downlink RLC	
Receiving window size	8

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let W be the size of the transmission window.

a) The SS transmits (W/2) + 2 RLC SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes.

b) The SS checks the sequence number of the first uplink PDU to be received with the P bit set.

c) The SS sends another RLC SDU of size AM_7_PayloadSize - 1 ~~15~~ bytes.

d) The SS checks the sequence number of the next uplink PDU to be received with the P bit set.

e) The SS sends a STATUS PDU acknowledging the first two RLC PDUs received, followed by two further RLC SDUs.

f) The SS checks the sequence number of the next uplink PDU to be received with the P bit set.

g) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU W/2+2
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = W/2+1, Poll
~~3~~8	←		DOWNLINK RLC PDU	
9	→		UPLINK RLC PDU	SN = W/2+2, Poll
~~8~~10	←		STATUS PDU	ACK SN 0 to 3
~~3~~11	←		DOWNLINK RLC PDU	
~~3~~12	←		DOWNLINK RLC PDU	
~~11~~13	→		UPLINK RLC PDU	SN = W/2+3
~~11~~14	→		UPLINK RLC PDU	SN = W/2+4, Poll
~~20~~15			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.20.5 Test requirements

The SS shall receive RLC PDUs with the P bit set in PDUs with sequence numbers of 5, 6 and 8. No other PDUs should have their P bits set.

7.2.3.21 Polling for status / Operation of Timer_Poll timer / Timer expiry

7.2.3.21.1 Definition

This case tests that the UE will retransmit a poll for status if it does not receive a STATUS PDU within Timer_Poll ms after a poll for status is transmitted. Incorrect operation of polling will cause degradation of service, or possible service failure.

7.2.3.21.2 Conformance requirement

The Polling bit shall be set to 1 if any of following conditions are fulfilled except when the poll prohibit function is used and the timer Timer_Poll_Prohibit is active.

…

3) Poll timer is used and timer Timer_Poll has expired.

Upon expiry of the Timer_Poll the sender shall retransmit the poll. The poll can be retransmitted in either a new PDU or a retransmitted PDU.

Reference

TS 25.322 clauses 11.3.2.1.1 and 11.3.4.1.

7.2.3.21.3 Test purpose

1. To verify that if the timer expires and no STATUS PDU containing an acknowledgement or negative acknowledgement of the AMD PDUs up to that which triggered the timer has been received, the receiver is polled once more.

7.2.3.21.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Last transmission PDU poll	FALSE	FALSE
Timer_poll	500	1000
Timer_Poll_Periodic	2000	2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let T be the value of the Timer_Poll_Periodic timer.

a) The SS transmits at least 2 * T / TTI SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes.

b) The SS receives PDUs from the UE, and notes the time on receiving the first PDU with the P bit set, but does not respond. This time will be recorded as T_1.

c) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PDU with the P bit set. This time will be recorded as T_2.

d) The SS may optionally release the radio bearer.

The test case is run once for each set of initial RLC parameters.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ceil(2T/TTI)
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = ceil(T/TTI), Poll: Note T_1
8	→		UPLINK RLC PDU	SN = ceil(T/TTI)+1
9	→		…	SS continues to receive RLC PDUs
10	→		UPLINK RLC PDU	Poll: Note T_2
11			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.21.5 Test requirements

For the first run, the measured time $T_2 - T_1$ should be 500 ms ~~± 40 ms (TTI = 40 ms)~~.

For the second run, the measured time $T_2 - T_1$ should be 1000 ms ~~± 40 ms~~.

7.2.3.22 Polling for status / Operation of Timer_Poll timer / Stopping Timer_Poll timer

7.2.3.22.1 Definition

This case tests that the UE will stop the Timer_Poll timer if it receives a STATUS PDU within Timer_Poll ms after a poll for status is transmitted. Incorrect operation of polling will cause degradation of service, or possible service failure.

7.2.3.22.2 Conformance requirement

The timer is stopped when receiving a STATUS PDU that contains an acknowledgement of all AMD PDUs with SN up to and including VT(S)-1 at the time the poll was submitted to lower layer,or when a negative acknowledgement of the same PDU is received.

Reference

TS 25.322 clause 9.5.

7.2.3.22.3 Test purpose

1. To verify that the Timer_Poll timer is stopped when receiving a STATUS PDU that ~~an acknowledgement~~ acknowledges ~~of~~ all AMD PDUs with SN up to and including VT(S)-1 at the time the poll was transmitted ~~(or a negative acknowledgement of the same PU)~~.

7.2.3.22.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Last transmission PDU poll	FALSE	FALSE
Timer_poll	500	1000
Timer_Poll_Periodic	2000	2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let T be the value of the Timer_Poll_Periodic timer.

a) The SS transmits at least 2 * T / TTI SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes.

b) The SS receives PDUs from the UE, and notes the time on receiving the first PDU with the P bit set. This time will be recorded as T_1.

c) The SS sends a STATUS PDU acknowledging all the PDUs up to and including the PDU carrying the poll request.

d) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PDU with the P bit set. This time will be recorded as T_2.

e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ceil(2T/TTI)
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = ceil(T/TTI), Poll: Note T_1
8	←		STATUS PDU	ACK SN 0 to SN ceil(T/TTI)
9	→		UPLINK RLC PDU	SN = ceil(T/TTI)+1
10	→		…	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	SN = ceil(2T/TTI), Poll: Note T_2
12			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.22.5 Test requirements

For both execution runs, the measured time $T_2 - T_1$ should be 2000 ms~~± 40 ms (TTI = 40ms)~~.

7.2.3.23 Polling for status / Operation of Timer_Poll timer / Restart of the Timer_Poll timer

7.2.3.23.1 Definition

This case tests that the UE will restart the Timer_Poll timer if another poll request is transmitted whilst the timer is running. Incorrect operation of polling will cause degradation of service, or possible service failure.

This test applies to all UE.

7.2.3.23.2 Conformance requirement

If a new poll is sent when the timer is running it is restarted, with a new value of VT(S)-1.

Reference

TS 25.322 clause 9.5.

7.2.3.23.3 Test purpose

1. To verify that if a new poll is sent when the timer is running it is restarted.

7.2.3.23.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Polling info	
Last transmission PDU poll	FALSE
Timer_poll	200
Poll_PDU	8
~~Poll_SDU~~	~~N/A~~

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let T be the value of the Timer_Poll timer.

a) The SS starts transmission of at least 2*Poll_PDU + ceil(T / TTI) numbers of SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes.

b) Whilst transmitting, the SS receives PDUs from the UE, and notes the time on receiving the third PDU with the P bit set. This time will be recorded as T_1.

c) The SS sends a STATUS PDU acknowledging all the PDUs received so far.~~up to, but not including the PDU carrying the poll request.~~

d) The SS continues to receive PDUs from the UE and notes the time on receipt of the next or fourth PDU with the P bit set. This time will be recorded as T_2.

e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	2* Poll_PDU + ceil(T / TTI) numbers of SDUs are sent.
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = poll_PDU - 1, 1st Poll, Timer_Poll started
8	→		…	SS continues to receive RLC PDUs
9	→		UPLINK RLC PDU	SN = poll_PDU-1+ceil(T /TTI), 2nd Poll, Timer_Poll expired and again started
10	→		UPLINK RLC PDU	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	SN= 2*Poll_PDU-1, 3rd Poll, Timer_Poll restarted: Note T1
12	←		STATUS PDU	ACK SN 0 to SN = 2*Poll_PDU-12
13	→		UPLINK RLC PDU	SN = 2*Poll_PDU
14	→		…	SS continues to receive RLC PDUs
15	→		UPLINK RLC PDU	SN = 2*Poll_PDU + ceil(T / TTI) -1, 4th Poll, Timer_Poll expired: Note T_2
16			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.23.5 Test requirements

The measured time $T_2 - T_1$ should be 200 ms ~~± 40 ms (TTI = 40ms)~~.

7.2.3.24 Polling for status / Operation of timer Timer_Poll_Prohibit

7.2.3.24.1 Definition

This case tests that the UE will not send a poll request within Timer_Poll_Prohibit ms of a previous poll request when this mode of operation is enabled. Incorrect operation of polling will cause degradation of service, or possible service failure.

7.2.3.24.2 Conformance requirement

This timer is only used when the poll prohibit function is used. It is used to prohibit transmission of polls within a certain period. The timer shall be started when the successful or unsuccessful transmission of a PDU containing a poll is indicated by lower layer (in UE) or a PDU containing a poll is submitted to lower layer (in UTRAN). The prohibit time is calculated from the time a PDU containing a poll is submitted to lower layer until the timer has expired. A poll shall be delayed until the prohibit time expires if a poll is triggered during the prohibit time. Only one poll shall be transmitted when the prohibit time expires even if several polls were triggered during the prohibit time. This timer will not be stopped by a received STATUS PDU.

The Polling bit shall be set to 1 if any of conditions in 3GPP TS 25.322 clause 11.3.2.1.1 are fulfilled except when the poll prohibit function is used and the timer Timer_Poll_Prohibit is active.

Reference

TS 25.322 clauses 9.5 and 11.3.2.1.1.

7.2.3.24.3 Test purpose

1. To verify that no poll is transmitted if one or several polls are triggered when the Timer_Poll_Prohibit timer is active and has not expired.

2. To verify that the UE polls only once after Timer_Poll_Prohibit expires even though triggered several times during the prohibit time.

7.2.3.24.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Polling info	
Timer_poll_prohibit	500
Last transmission PDU poll	FALSE
Poll_PU	8
~~Poll_SDU~~	~~N/A~~
Poll_Window	50
Timer_poll_periodic	400
Transmission window size	32
Downlink RLC	
Receiving window size	32

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize - 1 ~~15~~ bytes.

Test procedure

Let T be the value of the Timer_Poll_Prohibit timer.

a) The SS starts transmission of at least (~~Transmission Window Size / 2~~2*Poll_PDU) + ceil(T / TTI) SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes.

b) Whilst transmitting, the SS receives PDUs from the UE, and notes the time on receiving the first PDU with the P bit set. This time will be recorded as T_1.

c) The SS does not respond to the poll request.

d) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PDU with the P bit set. This time will be recorded as T_2.

e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ~~(Transmission window Size/2~~(2*Poll_PDU)+ ceil(T/TTI)
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = Poll_PDU - 1, Poll: Note T_1
8	→		…	SS continues to receive RLC PDUs
9	→		UPLINK RLC PDU	SN = ceil(Timer_poll_periodic/TTI) -1, No Poll
10	→		UPLINK RLC PDU	SN = (Transmission Window Size / 2) – 1, No Poll
11	→		…	SS continues to receive RLC PDUs
12	→		UPLINK RLC PDU	SN = ~~poll~~Poll_PDU + ceil(T/TTI) - 1, Poll: Note T_2
13			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.24.5 Test requirements

1. The measured time $T_2 - T_1$ should be 500 ms ~~± 40 ms (TTI = 40ms)~~.
2. Only one poll shall be received from the UE in step 12.
3. After step 12 no further poll shall be received from the UE for the next 500 ms.

7.2.3.25 Receiver Status Triggers / Detection of missing PDUs

7.2.3.25.1 Definition

This case tests that the UE transmits a status report whenever it detects that a PDU is missing, if this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

7.2.3.25.2 Conformance requirement

The receiver in any of following cases initiates this procedure … Detection of missing PDUs is used and a missing PDU is detected.

Reference

TS 25.322 clause 11.5.2.

7.2.3.25.3 Test purpose

1. To verify that a status report is transmitted if there are one or more missing PDUs.

7.2.3.25.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits 7 SDUs, each of size AM_7_PayloadSize - 1 ~~15~~ bytes, in PDUs with consecutive sequence numbers starting from 0, followed by 5 SDUs in PDUs with consecutive sequence numbers starting from 8, followed by an SDU in a PDU with a sequence number of 15.

b) While transmitting, the SS monitors the uplink for STATUS PDUs.

c) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SN = 0
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SN = 6
4	←		DOWNLINK RLC PDU	SN = 8
5	→		STATUS PDU	
6	←		DOWNLINK RLC PDU	
7	←		…	SS continues to receive RLC PDUs
8	←		DOWNLINK RLC PDU	SN = 12
9	←		DOWNLINK RLC PDU	SN = 15
10	→		STATUS PDU	
11			RB RELEASE	Optional step

7.2.3.25.5 Test requirements

A STATUS PDU should be received from the UE after step 4, indicating that the PDU with sequence number 7 was missing.

A STATUS PDU should be received from the UE after step 9, indicating that the PDUs with sequence numbers 13 and 14 were missing.

7.2.3.26 Receiver Status Triggers / Operation of timer Timer_Status_Periodic

7.2.3.26.1 Definition

This case tests that the UE transmits a status report every Timer_Status_Periodic ms when this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

7.2.3.26.2 Conformance requirement

The timer is started when the successful or unsuccessful transmission of the last STATUS PDU in a status report is indicated by lower layer.

The receiver in any of following cases initiates this procedure … The timer based STATUS transfer is used and the timer Timer_Status_Periodic has expired.

Reference

TS 25.322 clauses 9.5, 9.7.2 and 11.5.2.

7.2.3.26.3 Test purpose

1. To verify that a status report is transmitted each time the Timer_Status_Periodic timer expires.

7.2.3.26.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Timer_STATUS_periodic	 100

These settings apply to both the uplink and downlink DTCH.

Test procedure

Let T be the value of the Timer_STATUS_periodic timer.

a) The SS starts transmission of at least ceil(2 * T / TTI) SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes.

b) The SS waits to receive a STATUS PDU and notes the time. This time will be recorded as T_1.

c) The SS waits to receive a second STATUS PDU and notes the time. This time will be recorded as T_2.

d) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ceil(T/TTI)-1
4	→		STATUS PDU	Note T_1
5	←		DOWNLINK RLC PDU	
6	←		…	SS continues to receive RLC PDUs
7	←		DOWNLINK RLC PDU	SDU ceil(2T/TTI)-1
8	→		STATUS PDU	Note T_2
9			RB RELEASE	Optional step

7.2.3.26.5 Test requirements

The measured time $T_2 - T_1$ should be 100 ms ~~± 40 ms (TTI = 40ms)~~.

7.2.3.27 Receiver Status Triggers / Operation of timer Timer_Status_Prohibit

7.2.3.27.1 Definition

This case tests that the UE transmits a status report every Timer_Status_Prohibit ms when this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

7.2.3.27.2 Conformance requirement

The sending of a status report shall be delayed, if … STATUS prohibit is used and the timer Timer_Status_Prohibit is active.

The status report shall be transmitted after the Timer_Status_Prohibit has expired. The receiver shall send only one status report, even if there are several triggers when the timer is active. The rules for when the timer Timer_status_Prohibit is active are defined in 3GPP TS 25.322 clause 9.5.

Reference

TS 25.322 clause 11.5.2.

7.2.3.27.3 Test purpose

1. To verify that a status report is not transmitted while the Timer_Status_Prohibit timer is active.
2. To verify that only one status report is sent on the expiry of the Timer_Status_Prohibit timer if several triggers occur while it is active.

7.2.3.27.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC	
Timer_Status_Prohibit	500
Timer_STATUS_periodic	200

These settings apply to both the uplink and downlink DTCH.

Test procedure

Let T_{pro} be the value of the Timer_Status_Prohibit timer, and T_{per} be the value of the Timer_Status_Periodic timer.

a) The SS starts transmission of at least ceil(2 * T_{pro} / TTI) + ceil(T_{per}/TTI) SDUs of size AM_7_PayloadSize - 1 ~~15~~ bytes.

b) Whilst transmitting, the SS monitors the uplink for a STATUS PDU and notes the time. This time will be recorded as T_1.

c) The SS sets the P bit in a downlink PDU transmitted within the next floor(T_{pro}/TTI) PDUs.

d) The SS waits to receive a second STATUS PDU and notes the time. This time will be recorded as T_2.

e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ceil(T_{per}/TTI)
4	→		STATUS PDU	Note T_1
5	←		DOWNLINK RLC PDU	Poll
6	←		…	SS continues to transmit RLC PDUs
7	←		DOWNLINK RLC PDU	SDU ceil(T_{pro} / TTI) + ceil(T_{per}/TTI)
8	→		STATUS PDU	Note T_2
9			RB RELEASE	Optional step

7.2.3.27.5 Test requirements

1. The measured time $T_2 - T_1$ should be 500 ms ~~± 40 ms (TTI = 40ms)~~.

2. Only one STATUS PDU shall be received in step 8, after Timer_Status_Prohibit expiry.

7.2.3.28 Status reporting / Abnormal conditions / Reception of LIST SUFI with Length set to zero

7.2.3.28.1 Definition

Peer RLCs use STATUS PDUs to manage flow control and retransmission. On a STATUS report PDU with an invalid LIST SUFI the RLC must behave as specified. Incorrect behaviour may result in degradation of QoS, or failure of the UE to communicate.

7.2.3.28.2 Conformance requirement

The LENGTH field of the LIST SUFI is defined as:

The number of (SN_i , L_i)-pairs in the super-field of type LIST. The value "0000" is invalid and the list is discarded.

Reference

TS 25.322 clause 9.2.2.11.4.

7.2.3.28.3 Test purpose

To verify that if a STATUS PDU is received with a LIST SUFI and the LENGTH field is set to "0000" that the list is discarded.

7.2.3.28.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info Poll_PDU	 ~~1084~~

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to (2 * Poll_PDU * AM_7_PayloadSize) – 1 ~~500~~ bytes.

Test procedure

a) The SS sends an SDU of size (2 * Poll_PDU * AM_7_PayloadSize) – 1.

b) The SS monitors the received (looped back) PDUs for a poll request.

c) The SS responds to the poll request by transmitting a STATUS PDU with a LIST SUFI. The list contains an indication that two PDUs were not received, but has the length field set to "0000".

d) The SS continues to monitor the received PDUs to verify that none are retransmitted.

e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1 (start)
2		←	…	SS continues to transmit RLC PDUs
3		←	DOWNLINK RLC PDU	SDU 1 (end)
4		→	UPLINK RLC PDU	SDU 1 (start)
5		→	UPLINK RLC PDU	
6		→	…	SS continues to receive RLC PDUs
7		→	UPLINK RLC PDU	SN = Poll_PDU - 1, Poll
~~3~~8		←	STATUS PDU	LIST(LENGTH = "0000", SN = 1, SN = 2)
~~8~~9		→	…	SS continues to receive RLC PDUs
~~9~~10		→	UPLINK RLC PDU	Poll
~~3~~11		←	STATUS PDU	Normal reply
~~11~~12		→	…	SS continues to receive RLC PDUs
~~12~~13		→	UPLINK RLC PDU	SDU 1 (end)
~~13~~14			RB RELEASE	Optional step
NOTE: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.				

7.2.3.28.5 Test requirements

No RLC PDUs should be retransmitted by the UE.

7.2.3.29 Timer based discard, with explicit signalling / Expiry of Timer_Discard

7.2.3.29.1 Definition

This case tests that when the transmission of an SDU exceeds a time limit, the SDU is discarded by the sender, and the discard is signalled to the receiver. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

7.2.3.29.2 Conformance requirement

If the transmission time exceeds a predefined value for a SDU in acknowledged mode RLC, this SDU is discarded in the transmitter and a Move Receiving Window (MRW) command is sent to the receiver so that AMD PDUs carrying that SDU are discarded in the receiver and the receiver window is updated accordingly.

This procedure is initiated by the sender when the following conditions are fulfilled … Timer based SDU discard with explicit signalling is used, and Timer_Discard expires for an SDU.

This status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer_Status_Prohibit' is active.

The STATUS PDUs have higher priority than data PDUs.

Reference

TS 25.322 clauses 9.7.3.1, 11.3.4.3.1 and 11.6.

7.2.3.29.3 Test purpose

1. To verify that if the transmission time for an SDU exceeds Timer_Discard, the SDU is discarded in the transmitter and the MRW procedure is invoked.
2. ...

7.2.3.29.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
Timer based with explicit signalling	
~~Timer_MRW~~	~~500~~
Timer_Discard	1000
~~MaxMRW~~	~~4~~
~~Polling info~~	
~~Timer_poll_periodic~~	~~100~~
~~Downlink RLC~~	
~~Timer_Status_Prohibit~~	~~1000~~
~~Timer_STATUS_periodic~~	~~100~~

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize – 1 ~~55~~ bytes.

Test procedure

a) The SS sends at least 2 RLC SDUs of size AM_7_PayloadSize – 1 ~~15~~ bytes.

b) ~~Whilst transmitting, the~~ The SS notes the time that the first RLC PDU is received on the uplink. This time will be recorded as T_1.

c) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

~~d) The SS continues sending AM_7_PayloadSize – 1 15 byte RLC SDUs with poll requests.~~

~~e~~d) The SS monitors received STATUS PDUs for the presence of a MRW SUFI, noting the time it was received. This time will be recorded as T_2.

~~f~~e) The SS responds to the MRW command with a correct MRW_ACK.

~~g~~f) ~~The SS checks any RLC SDUs reassembled from the uplink.~~

~~h~~g) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	DOWNLINK RLC PDU	SDU 2
~~3~~		~~←~~	~~…~~	~~SS continues to send RLC PDUs~~
~~4~~3		→	UPLINK RLC PDU	SDU 1: Note T_1
~~5~~4		→	…	SS continues to receive RLC PDUs
~~6~~5		→	UPLINK RLC PDU	SDU 2 + Poll
~~7~~6		←	STATUS PDU	NAK SN=0
~~8~~		~~←~~	~~DOWNLINK RLC PDU~~	~~Poll~~
~~9~~7		→	…	SS continues to receive RLC ~~PDUs~~PDU with SN=0 + Poll
~~10~~		~~→~~	~~UPLINK RLC PDU~~	~~Poll~~
~~11~~8		←	~~STATUS PDU~~…	STATUS PDU, SS continues to NAK PDU with SN=0
~~12~~		~~←~~	~~DOWNLINK RLC PDU~~	~~SDU 3~~
~~13~~		~~→~~	~~…~~	~~SS continues to receive RLC PDUs~~
~~14~~9		→	STATUS PDU	MRW Command: Note T_2
~~15~~10		←	STATUS PDU	MRW_ACK
~~16~~11			RB RELEASE	Optional step

7.2.3.29.5 Test requirements

1. The measured time $T_2 - T_1$ should be 1000 ms ~~± 40 ms (TTI = 40ms).~~
2. The STATUS PDU received in step ~~14~~ 9 shall contain a MRW SUFI indicating that the first three PDUs should be discarded, and that the data indicated in the fourth PDU by the first LI should also be discarded.

7.2.3.29a Timer based discard, with explicit signalling / Expiry of Timer_Discard when Timer_STATUS_prohibit is active

7.2.3.29a.1 Definition

This case tests that when the transmission of an SDU exceeds a time limit, the SDU is discarded by the sender, and the discard is signalled to the receiver while the Timer_STATUS_Prohibit is active. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

This test applies to all UE.

7.2.3.29a.2 Conformance requirement

If the transmission time exceeds a predefined value for a SDU in acknowledged mode RLC, this SDU is discarded in the transmitter and a Move Receiving Window (MRW) command is sent to the receiver so that AMD PDUs carrying that SDU are discarded in the receiver and the receiver window is updated accordingly.

Upon expiry of Timer_Discard the sender shall initiate the SDU discard with explicit signalling procedure.

This status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer_Status_Prohibit' is active.

The STATUS PDUs have higher priority than data PDUs.

Reference

TS 25.322 clauses 9.7.3.1, 11.3.4.3.1 and 11.6.

7.2.3.29a.3 Test purpose

1. …
2. To verify that the MRW procedure status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer_Status_Prohibit' is active.

7.2.3.29a.4 Method of test

TBD

7.2.3.29a.5 Test requirements

TBD

7.2.3.30 Timer based discard, with explicit signalling / Obsolete MRW_ACK

7.2.3.30.1 Definition

This case tests the ability of the receiving AM RLC entity to handle obsolete information that can be received during a failure of the SDU discard procedure. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

7.2.3.30.2 Conformance requirement

If Timer_MRW expires before the discard procedure is terminated,the MRW SUFI shall be retransmitted, VT(MRW) is incremented by one and Timer_MRW restarted. MRW SUFI shall be exactly the same as previously transmitted even though some new SDUs would have been discarded during the running of the Timer_MRW.

The received MRW_ACK shall be discarded in the following cases.

1. …
2. If the SN_ACK field in the received MRW_ACK < SN_MRW_{LENGTH} in the transmitted MRW SUFI.
3. If the SN_ACK field in the received MRW_ACK is equal to the SN_MRW_{LENGTH} in the transmitted MRW SUFI and the N field in the received MRW_ACK is not equal to the N_{LENGTH} field in the transmitted MRW SUFI
4. If the SN_ACK field in the received MRW_ACK > SN_MRW_{LENGTH} in the transmitted MRW SUFI and the N field in the received MRW_ACK is not equal to zero.

Reference

TS 25.322 clauses 11.6.5 and 11.6.6.3.

7.2.3.30.3 Test purpose

1. To verify that the MRW SUFI is retransmitted if Timer_MRW expires before a valid MRW_ACK is received.
2. To verify that the MRW_ACK is discarded if the SN_ACK field < SN_MRW_{LENGTH}.
3. To verify that the MRW_ACK is discarded if the N field is not equal to N_{LENGTH} transmitted in the MRW SUFI.
4. To verify that the MRW_ACK is discarded if the N field is not zero and the SN_ACK field > SN_MRW_{LENGTH} in the transmitted MRW SUFI.

7.2.3.30.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
MaxDAT Retransmissions	
MaxDAT	40
Timer based with explicit signalling	
Timer_MRW	500
Timer_Discard	1000
MaxMRW	4
~~Polling info~~	
~~Timer_poll_periodic~~	~~100~~

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM_7_PayloadSize – 1 ~~55~~ bytes.

Test procedure

a) The SS sends at least 2 RLC SDUs of size AM_7_PayloadSize – 1 ~~15~~ bytes.

b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

~~c) The SS continues sending AM_7_PayloadSize – 1 15 byte RLC SDUs with poll requests.~~

~~d~~c) The SS monitors received STATUS PDUs for the presence of a MRW SUFI, noting the time it was received. This time will be recorded as T_1.

~~e~~d) The SS responds to the MRW command with an MRW_ACK with the SN_ACK field set to $SN\_MRW_{LENGTH} - 1$.

~~f~~e) The SS monitors received STATUS PDUs for another MRW SUFI, noting the time it was received. This time will be recorded as T_2.

~~g~~f) The SS responds to the MRW command with an MRW_ACK with the SN_ACK field set to SN_MRW_{LENGTH}, and the N field set to $(N_{LENGTH} - 1)$ modulo 4.

~~h~~g) The SS monitors received STATUS PDUs for another MRW SUFI, noting the time it was received. This time will be recorded as T_3.

~~i~~h) The SS responds to the MRW command with an MRW_ACK with the SN_ACK field set to $SN\_MRW_{LENGTH} + 1$, and the N field set to 1.

~~j~~i) The SS monitors received STATUS PDUs for another MRW SUFI.

~~k~~j) The SS responds to the MRW command with a correct MRW_ACK.

~~l~~k) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 2
~~3~~	~~←~~		~~…~~	~~SS continues to send RLC PDUs~~
43	→		UPLINK RLC PDU	SDU 1
~~5~~	~~→~~		~~…~~	~~SS continues to receive RLC PDUs~~
~~6~~4	→		UPLINK RLC PDU	SDU 2 + Poll
~~7~~5	←		STATUS PDU	NAK SN=0
~~8~~	~~←~~		~~DOWNLINK RLC PDU~~	~~Poll~~
~~9~~6	→		…	SS continues to receive RLC ~~PDUs~~PDU with SN=0 + Poll
~~10~~	~~→~~		~~UPLINK RLC PDU~~	~~Poll~~
~~11~~7	←		~~STATUS PDU~~…	STATUS PDU, SS continues to NAK PDU with SN=0
~~12~~	~~←~~		~~DOWNLINK RLC PDU~~	~~SDU 3~~
~~13~~	~~→~~		~~…~~	~~SS continues to receive RLC PDUs~~
~~14~~8	→		STATUS PDU	MRW Command: Note T_1
~~15~~9	←		STATUS PDU	MRW_ACK, SN_ACK = $SN\_MRW_{LENGTH} - 1$
~~16~~10	→		STATUS PDU	MRW Command: Note T_2
~~17~~11	←		STATUS PDU	MRW_ACK, N field = (N_{LENGTH} + 1) modulo 4~~N_{LENGTH} – 1~~
~~18~~12	→		STATUS PDU	MRW Command: Note T_3
~~19~~13	←		STATUS PDU	MRW_ACK, SN_ACK = SN_MRW_{LENGTH} + 1, N field = 1
~~20~~14	→		STATUS PDU	MRW Command
~~21~~15	←		STATUS PDU	MRW_ACK
~~22~~16			RB RELEASE	Optional step

7.2.3.30.5 Test requirements

1. The measured time $T_2 - T_1$ should be 500 ms.
2. The measured time $T_3 - T_2$ should be 500 ms.
3. The STATUS PDUs received in steps ~~14~~ 8, ~~16~~ 10, 12 and ~~18~~ 14 shall contain an identical MRW SUFI. ~~indicating that the first three PDUs should be discarded, and that the data indicated in the fourth PDU by the first LI should also be discarded.~~

7.2.3.31 Timer based discard, with explicit signalling / Failure of MRW procedure

7.2.3.31.1 Definition

This case tests that if a failure occurs during the signalling of an SDU discard to the receiver, the retransmission protocol operates correctly. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

7.2.3.31.2 Conformance requirement

If the number of retransmission of a MRW command (i.e. VT(MRW)) reaches MaxMRW, an error indication shall be passed to RRC and RESET procedure shall be performed.

Reference

TS 25.322 clause 11.6.6.2.

7.2.3.31.3 Test purpose

1. To verify that when the number of retransmissions of a MRW command reaches MaxMRW, an error indication is passed to RRC and RESET procedure is initiated.

7.2.3.31.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
MaxDAT Retransmissions	
MaxDAT	40, See Note
Timer based with explicit signalling	
Timer_MRW	500
Timer_Discard	500
MaxMRW	4
Polling info	
Poll_PDU	2
Note. MaxDat is set to 40 to avoid SDU discard during the test due to VT(DAT) ≥ MaxDAT.	

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1with the UL SDU size set to ~~31~~ (2 * AM_7_PayloadSize) – 1 bytes.

Test procedure

a) The SS sends 4 RLC SDUs of size ~~31~~ (2 * AM_7_PayloadSize) – 1 bytes.

b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests as follows: While the VR(H) is 4 or less, with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received. While the VR(H) is greater than 4, a STATUS PDU negatively acknowledging RLC PDUs with sequence numbers 0 and 4, and positively acknowledging all others.

c) The SS monitors received STATUS PDUs for the presence of an MRW SUFI, noting the time it was received. This time will be recorded as T_1.

d) The SS makes no response, but monitors for the next STATUS PDU containing an MRW SUFI, noting the time it was received. This time will be recorded as T_2.

e) The SS sends a STATUS PDU with an MRW_ACK indicating the discard of SDU 1 moving VR(R) to 4.

f) The SS monitors for further STATUS PDUs containing an MRW SUFI, or for a RESET PDU. The SS records the number of STATUS PDUs it received with MRW SUFI before it received the RESET PDU.

g) The SS checks any RLC SDUs reassembled from the uplink.

h) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		…	SS continues to send RLC PDUs
5	←		DOWNLINK RLC PDU	SDU 4
6	→		UPLINK RLC PDU	SDU 1
7	→		…	SS continues to receive RLC PDUs
8	→		UPLINK RLC PDU	Poll
9	←		STATUS PDU	NAK SN=0
10	→		…	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	Poll
12	←		STATUS PDU	NAK SN=0, 4
13	→		…	SS continues to receive RLC PDUs
14	→		STATUS PDU	MRW Command: Note T_1
15	→		STATUS PDU	MRW Command: Note T_2
16	←		STATUS PDU	MRW_ACK indicating VR(R) = 4
17	→		STATUS PDU	MRW Command, discard SDU 3
18	→		STATUS PDU	MRW Command
19	→		STATUS PDU	MRW Command
20	→		STATUS PDU	MRW Command
21	→		RESET PDU	
22	←		RESET ACK PDU	
23			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.31.5 Test requirements

The measured time $T_2 - T_1$ should be 500 ms~~± 40 ms (TTI = 40ms)~~.

After step ~~16~~17, the SS should detect ~~4~~ 3 repeats of the MRW command sent in step 17 before a RESET PDU is sent.

7.2.3.32 SDU discard after MaxDAT number of retransmissions

7.2.3.32.1 Definition

This case tests that if a PDU is unsuccessfully transmitted MaxDAT times, the SDU it carries, and therefore all other associated PDUs, are discarded by the transmitter and receiver. This mode of SDU discard is used to minimize data loss, and incorrect operation will effect the quality of service.

7.2.3.32.2 Conformance requirement

There is one VT(DAT) for each PDU and it is incremented each time the PDU is transmitted. The initial value of this variable is 0.

If SDU discard after MaxDAT number of retransmission is used and VT(DAT) ≥ MaxDAT for any PDU, the sender shall initiate the SDU discard with explicit signalling procedure for the SDUs to which the PDU with VT(DAT) ≥MaxDAT belongs.

Reference

TS 25.322 clauses 9.4 and 11.3.4.4.

7.2.3.32.3 Test purpose

1. To verify that if VT(DAT) ≥ MaxDAT for any PDU the sender initiates the SDU discard with explicit signalling procedure.

7.2.3.32.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to (2 * AM_7_PayloadSize) – 1 ~~31~~ bytes.

Test procedure

a) The SS sends 2 RLC SDUs of size (2 * AM_7_PayloadSize) – 1 ~~31~~ bytes.

b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

c) The SS monitors received STATUS PDUs for the presence of an MRW SUFI.

d) The SS responds with a STATUS PDU containing a valid MRW_ACK SUFI.

e) The SS checks any RLC SDUs reassembled from the uplink.

f) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 2
4		←	DOWNLINK RLC PDU	SDU 2
5		→	UPLINK RLC PDU	SDU 1
6		→	…	SS continues to receive RLC PDUs
7		→	UPLINK RLC PDU	SDU 2, Poll
8		←	STATUS PDU	NAK SN=0
9		→	UPLINK RLC PDU	Retransmit SN=0, Poll
10		←	STATUS PDU	NAK SN=0
11		→	UPLINK RLC PDU	Retransmit SN=0, Poll
12		←	STATUS PDU	NAK SN=0
13		→	UPLINK RLC PDU	Retransmit SN=0, Poll
14		←	STATUS PDU	NAK SN=0
15		→	STATUS PDU	MRW Command
16		←	STATUS PDU	MRW_ACK
17			RB RELEASE	Optional step
NOTE: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.				

7.2.3.32.5 Test requirements

The uplink RLC PDU with sequence number 0 shall be retransmitted three times, then the SS shall detect a STATUS PDU with an MRW command.

7.2.3.33 Operation of the RLC Reset procedure / UE Originated

7.2.3.33.1 Definition

This case tests that when an unrecoverable protocol error occurs the UE will initiate and perform the RLC Reset procedure. Incorrect operation of this procedure may cause loss of service.

7.2.3.33.2 Conformance requirement

The procedure shall be initiated when a protocol error occurs.

The sender sends the RESET PDU when it is in data transfer ready state and enters reset pending state. The sender shall start the timer Timer_RST and increase VT(RST) with 1.

The RSN field shall indicate the sequence number of the RESET PDU. This sequence number is incremented every time a new RESET PDU is transmitted, but not when a RESET PDU is retransmitted.

Upon reception of a RESET PDU the receiver shall respond with a RESET ACK PDU. The receiver resets the state variables to their initial value and resets configurable parameters to their configured value. Both the transmitter and receiver side of the AM RLC entity are reset. All RLC PDUs in the AM RLC receiver shall be discarded. The RLC SDUs in the AM RLC transmitter that were transmitted before the reset shall be discarded.

When a RESET PDU is received, the receiver shall set the HFN (DL HFN when the RESET is received in UE or UL HFN when the RESET is received in UTRAN) equal to the HFNI field in the received RESET PDU.

Upon reception of a RESET ACK the Timer_RST shall be stopped. The sender resets the state variables to their initial value and resets configurable parameters to their configured value. The sender shall enter data transfer ready state.

Upon expiry of Timer_RST the sender shall retransmit the RESET PDU and increase VT(RST) with 1.

If VT(RST) becomes larger or equal to MaxRST the RRC layer shall be informed.

Reference

TS 25.322 clause 11.4.

7.2.3.33.3 Test purpose

1. To verify that the Reset procedure is initiated when a protocol error occurs.
2. To verify that the sender resets state variables to their initial value and resets configurable parameters to their configured value.
3. To verify that RSN is updated correctly.
4. To verify operation of Timer_RST.

7.2.3.33.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission RLC discard No discard	

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to (2 * AM_7_PayloadSize) – 1 ~~31~~ bytes.

Test procedure

a) The SS sends 2 RLC SDUs of size (2 * AM_7_PayloadSize) – 1 ~~31~~ bytes.

b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

c) The SS notes the time that the RESET PDU is received. This time will be recorded as T_1. The SS notes the value of the RSN bit.

d) The SS makes no response, and notes the time that the next RESET PDU is received. This time will be recorded as T_2. The SS notes the value of the RSN bit.

e) The SS sends a RESET ACK PDU with the RSN bit set to the same value as received in the RESET PDU received in step d).

f) The SS sends an RLC SDU of size (2 * AM_7_PayloadSize) – 1 ~~31~~ bytes.

g) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

h) The SS notes the value of the RSN bit of the RESET PDU received.

i) The SS sends a RESET ACK PDU with the RSN bit set to the value received in the RESET PDU in step c (the incorrect value).

j) The SS waits to receive another RESET PDU and checks the RSN bit.

k) The SS sends a RESET ACK PDU with the correct RSN bit.

l) The SS checks any RLC SDU received on the uplink.

m) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		DOWNLINK RLC PDU	SDU 2
5	→		UPLINK RLC PDU	SDU 1
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SDU 2, Poll
8	←		STATUS PDU	NAK SN=0
9	→		UPLINK RLC PDU	Retransmit SN=0, Poll
10	←		STATUS PDU	NAK SN=0
11	→		UPLINK RLC PDU	Retransmit SN=0, Poll
12	←		STATUS PDU	NAK SN=0
13	→		UPLINK RLC PDU	Retransmit SN=0, Poll
14	←		STATUS PDU	NAK SN=0
~~15~~	~~→~~		~~UPLINK RLC PDU~~	~~Retransmit SN=0, Poll~~
~~16~~	~~←~~		~~STATUS PDU~~	~~NAK SN=0~~
~~17~~15	→		RESET PDU	Note T_1
~~18~~16	→		RESET PDU	Note T_2, check RSN
~~19~~17	←		RESET ACK PDU	
~~20~~18	←		DOWNLINK RLC PDU	SDU 3
~~21~~19	←		DOWNLINK RLC PDU	SDU 3
~~22~~20	→		UPLINK RLC PDU	SDU 3, SN=0
~~23~~	~~→~~		~~UPLINK RLC PDU~~	~~SDU 3~~
~~24~~21	→		UPLINK RLC PDU	SDU 3, Poll
~~25~~22	←		STATUS PDU	NAK SN=0
~~26~~23	→		UPLINK RLC PDU	Retransmit SN=0, Poll
~~27~~24	←		STATUS PDU	NAK SN=0
~~28~~25	→		UPLINK RLC PDU	Retransmit SN=0, Poll
~~29~~26	←		STATUS PDU	NAK SN=0
~~30~~27	→		UPLINK RLC PDU	Retransmit SN=0, Poll
~~31~~28	←		STATUS PDU	NAK SN=0
~~32~~	~~→~~		~~UPLINK RLC PDU~~	~~Retransmit SN=0, Poll~~
~~33~~	~~←~~		~~STATUS PDU~~	~~NAK SN=0~~
~~34~~29	→		RESET PDU	Check RSN
~~35~~30	←		RESET ACK PDU	RSN = 0
~~34~~31	→		RESET PDU	Check RSN
~~35~~32	←		RESET ACK PDU	RSN = 1
~~36~~33			RB RELEASE	Optional step
NOTE: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.				

7.2.3.33.5 Test requirements

1. The measured time $T_2 - T_1$ should be 500 ms.
2. In steps 20 to 21 ~~The~~ the SS shall receive an RLC SDU with contents that match the third RLC SDU sent to the UE. The first RLC PDU containing that SDU shall have sequence number 0.
3. The RSN bit of the first and second RESET PDUs received should be set to 0. The RSN bit of the third and fourth RESET PDU should be set to 1.

7.2.3.34 Operation of the RLC Reset procedure / UE Terminated

7.2.3.34.1 Definition

This case tests that when an unrecoverable protocol error occurs the UE responds correctly to the RLC Reset procedure initiated by the network. Incorrect operation of this procedure may cause loss of service.

7.2.3.34.2 Conformance requirement

Upon reception of a RESET PDU the receiver shall respond with a RESET ACK PDU. The receiver resets the state variables to their initial value and resets configurable parameters to their configured value. Both the transmitter and receiver side of the AM RLC entity are reset. All RLC PDUs in the AM RLC receiver shall be discarded. The RLC SDUs in the AM RLC transmitter that were transmitted before the reset shall be discarded.

Reference

TS 25.322 clause 11.4.3.

7.2.3.34.3 Test purpose

1. To verify that upon reception of a RESET PDU the receiver responds with a RESET ACK PDU.
2. To verify that the receiver resets its state variables to their initial value and resets configurable parameters to their configured value.

7.2.3.34.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission RLC discard No discard	

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS sends 2 RLC SDUs of size (2 * AM_7_PayloadSize) – 1 ~~31~~ bytes, and polls on the last PDU sent.

b) The SS checks the STATUS PDUs received on the uplink until both SDUs have been acknowledged.

c) The SS transmits a RESET PDU.

d) The SS monitors the uplink for a RESET ACK PDU.

e) The SS sends an RLC SDU of size (2 * AM_7_PayloadSize) – 1 ~~31~~ bytes, and polls on the last PDU sent.

f) The SS checks for STATUS PDUs received on the uplink until the SDU has been acknowledged.

g) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		DOWNLINK RLC PDU	SDU 2, poll
5	→		STATUS PDU	ACK SN=0, 1, 2 and 3
6	←		RESET PDU	
7	→		RESET ACK PDU	
8	←		DOWNLINK RLC PDU	SDU 3
9	←		DOWNLINK RLC PDU	SDU 3, poll
10	→		STATUS PDU	ACK SN=0 and 1
11			RB RELEASE	Optional step
NOTE: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.				

7.2.3.34.5 Test requirements

1. The SS shall receive a RESET ACK PDU in step 7.

2. The SS shall receive a STATUS PDU in step 10 acknowledging for the third RLC SDU transmitted with PDUs starting at SN=0.

3GPP TSG-T1 Meeting #13
Cancun, Mexico, 29 – 30 Nov 2001

Tdoc T1-010409

3GPP TSG-T1/SIG Meeting #20
Cancun, Mexico, 26-28 Nov 2001

Tdoc T1S-010312

CR-Form-v3

CHANGE REQUEST

⌘ **TS 34.123-1** **CR** **116** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Idle mode test cases
Source:	⌘	Ericsson
Work item code:	⌘	TEI
Date:	⌘	2001-11-22
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	Clause 6.2.2.2: In the Test procedure, the previous steps must be repeated in order to switch on the UE and make it camp on the GSM cell
Summary of change:	⌘	As above
Consequences if not approved:	⌘	A UE will never successfully pass the test

Clauses affected:	⌘	Clause 6.2.2.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	Affects R99 and REL-4.

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.2.2.2 Cell reselection if cell becomes barred or C1<0; GSM to UTRAN

6.2.2.2.1 Definition

Test to verify that if both a GSM and UTRAN network is available, the UE performs cell reselection from GSM to UTRAN if the GSM cell becomes barred or the path loss criterion C1 falls below zero for a period of 5 s.

6.2.2.2.2 Conformance requirement

1. At least every 5 s the MS shall calculate the value of C1 and C2 for the serving cell and re-calculate C1 and C2 values for non serving cells (if necessary). The MS shall then check whether:

   1.1 The path loss criterion (C1) for current serving cell falls below zero for a period of 5 s. This indicates that the path loss to the cell has become too high.

2. While camped on a cell of the registered PLMN ("camped normally"), the MS may need to select a different cell ("normal cell reselection" state). The following events trigger a cell reselection:

   2.1 The path loss criterion parameter C1 (see TS 03.22, clause 3.6) indicates that the path loss to the cell has become too high;

   2.2 The cell camped on (current serving cell) has become barred.

References

1. TS 05.08, clause 6.6.2.
2. TS 03.22, clause 4.5.

6.2.2.2.3 Test purpose

1. To verify that the UE performs reselection from GSM to UTRAN on the following occasions:

   1.1 Serving cell becomes barred.

   1.2 The path loss criterion C1 for serving cell falls below zero for a period of 5 s.

6.2.2.2.4 Method of test

Initial conditions

The USIM does not contain any preferred RAT.Step a-c:

Parameter	Unit	Cell 1 (GSM)
Test Channel		1
RF Signal Level	dBm	-50
RXLEV_ACCESS_MIN	dBm	-70
MS_TXPWR_MAX_CCH	dBm	Max. output power of UE
FDD_Qmin	dB	-20
FDD_Qoffset	dBm	0
CellBarred		0
C1*	dBm	20

Parameter	Unit	Cell 2 (UTRAN)	Cell 3 (UTRAN)
CPICH_Ec/Io	dB	-13	-15
CPICH_RSCP	dBm	-76	-78
Qqualmin	dB	-20	-20
Qrxlevmin	dBm	-100	-100
Squal*	dB	7	5
Srxlev*	dBm	24	22

Step d-e:

Parameter	Unit	Cell 1 (GSM)
CellBarred		0 -> 1

Step f-g:

Parameter	Unit	Cell 1 (GSM)
RF Signal Level	dBm	-50 -> -80 (4sec) -> -50
C1*	dBm	20 -> -10 (4sec) -> 20

Step h:

Parameter	Unit	Cell 1 (GSM)
RF Signal Level	dBm	-50 -> -80
C1*	dBm	20 -> -10

Test procedure

Method B is applied.

a) The SS activates cells 1, 2, and 3. The SS monitors cells 1, 2 and 3 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE.

d) The SS sets Cell 1 to be barred.

e) The SS waits for random access request from the UE.

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

g) Step a-e) is repeated except that in step d), ~~T~~the SS reduces signal level on Cell 1 to –80 dBm for 4 s and then raises the level back to –50 dBm (C1 becomes –10 dBm during this period).

h) The SS reduces signal level on Cell 1 to –80 dBm.

6.2.2.2.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 2.

3) In step g), there shall be no access on Cell 2 within 30 s after having reduced the signal level on Cell 1.

4) In step h), the UE shall respond on Cell 2.

3GPP TSG-T1 Meeting #13
Cancún, México, 29th – 30th November 2001

Tdoc TSG T1-010410

3GPP TSG-T1/SIG SWG Meeting #19
Cancún, México, 26th – 28th November 2001

Tdoc TSG T1S-010325r1

CR-Form

CHANGE REQUEST

⌘ **34.123-1** **CR** 117 ⌘ rev ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Removal of TBD Power Levels in section 6
Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	26.11.01
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	TBD entries in TS 34.123-1 are replaced for the concrete values needed for TDD mode 6.1.2.7 Emergency calls; Intra-frequency cell "Not allowed" is updated for TDD mode, including a table with the TDD values needed.
Summary of change:	⌘	
Consequences if not approved:	⌘	Power levels will not be defined for TDD test channels.

Clauses affected:	⌘	6, 6.1		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	TS 34.123-2
Other comments:	⌘	This CR affects Release 99 and Release 4		

6 Idle mode operations

In the following paragraphs some explanatory text is given concerning the nature of the tests in this clause and the general behaviour of the SS is described.

Since the conformance requirements of most of the tests in this clause cannot be tested explicitly, testing is done implicitly by testing the UE behaviour from its responses to the SS.

In some cases, a test is performed in multiple stages in order that the requirements can be tested within the above constraints.

For any UE all the carriers are in its supported band(s) of operation.

Unless otherwise stated in the method of test, in all of the tests of this clause:

- the default values of the system information data fields given in TS 34.108 are used;
- the UE is equipped with a USIM containing default values. The USIM is in the idle updated state in the default location area with a TMSI assigned at the beginning of each test;
- the cells shall be configured such that Squal>0 (FDD only) and Srxlev>0 while applying Qqualmin (FDD only) and Qrxlevmin in table 6.1. In addition, for an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm (definition of High Quality cell, see TS 25.304, clause 5.1.2.2). In addition, for a TDD cell, the measured P-CCPCH RSCP shall be greater than or equal to –84 dBm (definition of High Quality cell, see TS 25.304, clause 5.1.2.2).

Three different methods A, B and C are applied in the tests:

Method A:

- the SS is continuously paging the UE on all cells at the start of the test and does not respond to RACH requests from the UE (which causes a cell reselection). Where a test specifies that the UE is not paged on a particular cell, only idle paging is transmitted. This method is similar to the one used in TS 51.010-1, clause 20.

Method B:

- the SS is continuously paging the UE on all cells at the start of the test and responds to RACH requests from the UE with an IMMEDIATE ASSIGNMENT REJECT (GERAN cell) or RRC CONNECTION REJECT (UTRAN cell) message which causes the UE to return to Idle mode. Where a test specifies that the UE is not paged in a particular cell, only idle paging is transmitted.

Method C:

- no continuously paging as in method A or B. Normal response to RACH requests so Location Updating and Calls can be done.

Table 6.1: Default values of the system information fields

Parameter	Setting
IMSI attach/detach	Method A, B: Not allowed Method C: Allowed
Intra-frequency cell re-selection indicator	Allowed
Cell_selection_and_reselection_quality_measure	CPICH E_c/N_o (FDD)
Qqualmin (FDD only)	-20 dB
Qrxlevmin (FDD)	-115 dBm
Qrxlevmin (TDD)	-103 dBm
DRX cycle length	1,28 s

It is a UE option whether to indicate access technologies to the user (TS 23.122, clause 4.4.3.1.2). Therefore, for combined UTRAN/GSM tests, it is indicated in parentheses which access technology shall be indicated to the user if the UE has this capability.

If a parameter is indicated with a *, it means that the parameter is calculated internally in the UE and is only shown for clarification of the test procedure.

The PLMN numbers indicated in table 6.2 are used in test cases to associate a cell with an MCC and MNC for that cell. If no PLMN is explicitly specified, the default value is PLMN 1.

Table 6.2: Location Area Information (LAI) in System Information type 3 messages broadcast on the BCCH

PLMN	MCC1	MCC2	MCC3	MNC1	MNC2	MNC3	LAC
1	0	0	1	0	1	F	x
2	0	0	2	1	F	F	x
3	0	0	4	2	F	F	x
4	0	0	5	3	F	F	x
5	0	0	6	4	F	F	x
6	0	0	7	5	F	F	x
7	0	0	8	6	F	F	x
8	0	0	9	7	F	F	x
9	0	1	0	0	F	F	x
10	0	1	1	1	F	F	x
11	0	1	2	2	F	F	x
12	0	1	3	3	F	F	x
NOTE: 'x' denotes any value.							

References: TS 23.122, annex A and TS 23.003, clause 2.

The test channel numbers indicated in tables 6.3, 6.4 and 6.5 are used in test cases to associate a cell with a frequency for that cell. The frequencies for GSM and DCS cells in table 6.5 are identical to those used in TS 51.010-1, clause 26.3.1. The RF signal levels for GSM cells are given in table 6.5 for UTRAN FDD cells in TS 34.108, table 6.1.1 and for UTRAN TDD cells in TS 34.108, table 6.1.5. If no channel is explicitly specified, the default value is Test Channel 1.

Table 6.3: UTRA (FDD) test frequencies

			ITU region 2	
Test Channel	**CPICH_RSCP dBm**	**UARFCN**	**CPICH_RSCP dBm**	**UARFCN**
1	-72	9 613	-72	9 263
2	-75	9 663	-75	9 313
3	-78	9 713	-78	9 363
4	-81	9 763	-81	9 413
5	-84	9 813	-84	9 463
6	-87	9 863	-87	9 513

References: TS 34.108, clause 5.1.1 and TS 34.121, clause 4.

Table 6.4: UTRA TDD test frequencies

			ITU region 2	
Test Channel	**P-CCPCH_ RSCP [dBm]**	**UARFCN**	**P-CCPCH_ RSCP [dBm]**	**UARFCN**
1	-61~~[TBD]~~	9 513	-61~~[TBD]~~	9 263
2	-64~~[TBD]~~	9 550	-64~~[TBD]~~	9 537
3	-67~~[TBD]~~	9 587	-67~~[TBD]~~	9 663
4	-70~~[TBD]~~	10 063	-70~~[TBD]~~	9 937
5	-73~~[TBD]~~	10 087	-73~~[TBD]~~	9 563
6	-76~~[TBD]~~	10 112	-76~~[TBD]~~	9 637

References: TS 34.108, clause 5.1.2 and TS 34.122, clause 4.

Table 6.5: GSM/DCS test frequencies and levels

	GSM 900		DCS 1 800	
Test Channel	**level dBµVemf( ) / dBm**	**BCCH ARFCN**	**level dBµVemf( ) / dBm**	**BCCH ARFCN**
1	+65 / -48	1	+65 / -48	520
2	+63 / -50	7	+63 / -50	580
3	+61 / -52	39	+61 / -52	610
4	+55 / -58	65	+55 / -58	702
5	+59 / -54	66	+59 / -54	703
6	+57 / -56	85	+57 / -56	830
7	+55 / -58	97	+55 / -58	885
8	+53 / -60	124		

	GSM 450		DCS 480	
Test Channel	**level dBµVemf( ) / dBm**	**BCCH ARFCN**	**level dBµVemf( ) / dBm**	**BCCH ARFCN**
1	+65 / -48	259	+65 / -48	306
2	+63 / -50	261	+63 / -50	308
3	+61 / -52	267	+61 / -52	314
4	+55 / -58	268	+55 / -58	315
5	+59 / -54	281	+59 / -54	328
6	+57 / -56	288	+57 / -56	335
7	+55 / -58	291	+55 / -58	338
8	+53 / -60	293	+53 / -60	340

	Multiband 900/1800		PCS 1900	
Test Channel	**level dBµVemf( ) / dBm**	**BCCH ARFCN**	**level dBmVemf( ) / dBm**	**BCCH ARFCN**
1	+65 / -48	520	+65 / -48	512
2	+63 / -50	7	+63 / -50	520
3	+61 / -52	39	+61 / -52	580
4	+55 / -58	702	+55 / -58	610
5	+59 / -54	66	+59 / -54	702
6	+57 / -56	85	+57 / -56	703
7	+55 / -58	885	+55 / -58	800
8	+53 / -60	124		

	Multiband 450/900		Multiband 480/900	
Test Channel	**level dBµVemf( ) / dBm**	**BCCH ARFCN**	**level dBµVemf( ) / dBm**	**BCCH ARFCN**
1	+65 / -48	1	+65 / -48	1
2	+63 / -50	261	+63 / -50	308
3	+61 / -52	267	+61 / -52	314
4	+55 / -58	65	+55 / -58	65
5	+59 / -54	281	+59 / -54	328
6	+57 / -56	288	+57 / -56	335
7	+55 / -58	124	+55 / -58	124
8	+53 / -60	293	+53 / -60	340

	Multiband 450/1800		Multiband 480/1800	
Test Channel	**level dBµVemf( ) / dBm**	**BCCH ARFCN**	**level dBµVemf( ) / dBm**	**BCCH ARFCN**
1	+65 / -48	520	+65 / -48	520
2	+63 / -50	261	+63 / -50	308
3	+61 / -52	267	+61 / -52	314
4	+55 / -58	702	+55 / -58	702
5	+59 / -54	281	+59 / -54	328
6	+57 / -56	288	+57 / -56	335
7	+55 / -58	885	+55 / -58	885
8	+53 / -60	293	+53 / -60	340

For testing an E-GSM Mobile station, the BCCH ARFCN of GSM Test Channel 7 at GSM 900 column shall be 985 (instead of 97). For testing an R-GSM Mobile station, the BCCH ARFCN of GSM Test Channel 7 at GSM 900 column shall be 965 (instead of 97).

6.1 In a pure 3GPP environment

6.1.1 PLMN selection and reselection

6.1.1.1 PLMN selection of RPLMN, HPLMN, UPLMN and OPLMN; Manual mode

6.1.1.1.1 Definition

Test to verify that the UE can present the available PLMNs in priority order to the user when asked to do so in manual mode and that the displayed PLMNs can be selected / reselected by the user. Forbidden PLMNs shall also by displayed in the list. If available, the RPLMN shall be selected at switch-on, otherwise the displayed list shall include in priority order HPLMN, User-PLMN and Operator-PLMN. The last priority in the list is "Other PLMN/access technology combinations" which is not included in this test.
Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

6.1.1.1.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   2.1 HPLMN;

   2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.4 Other PLMN/access technology combinations with received high quality signal in random order;

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall

ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden PLMNs" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

References

1. TS 23.122, clause 4.4.3.1;
2. TS 23.122, clause 4.4.3.1.2;
3. TS 23.122, clause 3.1.

NOTE: TS 31.102 defines the USIM fields.

6.1.1.1.3 Test purpose

1. To verify that if available, the RPLMN is selected at switch-on.
2. To verify that in Manual Network Selection Mode Procedure, the UE presents the HPLMN, UPLMN and OPLMN in a prioritized order.
3. To verify that forbidden PLMNs are also displayed in the list.

6.1.1.1.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP. Cell levels are from table 6.3. (FDD).

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_ RSCP [dBm] (FDD)	P-CCPCH_ RSCP [dBm] (TDD)	Test Channel	PLMN
Cell 1	-72	-61~~[TBD]~~	1	PLMN 1
Cell 2	-75	-64~~[TBD]~~	2	PLMN 2
Cell 3	-78	-67~~[TBD]~~	3	PLMN 3
Cell 4	-81	-70~~[TBD]~~	4	PLMN 4
Cell 5	-84	-73~~[TBD]~~	5	PLMN 5
Cell 6	-87	-76~~[TBD]~~	6	PLMN 6

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		PLMN 1
$EF_{HPLMNwAcT}$	1st	PLMN 2
$EF_{PLMNwAcT}$	1st	PLMN 3
	2nd	PLMN 4
$EF_{OPLMNwAcT}$	1st	PLMN 5
	2nd	PLMN 6
EF_{FPLMN}	PLMN 3	

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) Cell 1 is switched off.

e) PLMN 4 shall be selected when the PLMN list is presented.

f) The SS waits for random access requests from the UE.

g) Cell 4 is switched off.

h) PLMN 3 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

i) PLMN 5 shall be selected (the list is already available).

j) The SS waits for random access requests from the UE.

k) Cell 5 is switched off.

l) PLMN 2 shall be selected when the PLMN list is presented.

m) The SS waits for random access requests from the UE.

n) Cell 2 is switched off.

o) PLMN 6 shall be selected when the PLMN list is presented.

p) The SS waits for random access requests from the UE.

q) Cell 6 is switched off.

6.1.1.1.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 1.

2) In step e), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 4, PLMN 5, PLMN 6.

3) In step f), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 4.

4) In step h), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 5, PLMN 6. After PLMN 3 has been selected, the list shall appear again as the UE cannot perform registration.

6) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN 5.

7) In step l), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 6.

8) In step m), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 2.

9) In step o), the list shall be presented. The priority shall be as follows: PLMN 3, PLMN 6.

10) In step p), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 6.

11) After step q), the UE shall inform that only limited service is possible.

6.1.1.2 PLMN selection of "Other PLMN / access technology combinations"; Manual mode

6.1.1.2.1 Definition

Test to verify that the UE can present the available PLMNs in priority order to the user when asked to do so in manual mode and that the displayed PLMNs can be selected / reselected by the user. Forbidden PLMNs shall also by displayed in the list. In this test are only considered "Other PLMN/access technology combinations" in the priority list.
Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

6.1.1.2.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   2.1 HPLMN;

   2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.4 Other PLMN/access technology combinations with received high quality signal in random order;

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

In 2.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden PLMNs" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

4. The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the strongest cell according to the cell search procedures (for FDD, see TS 25.214, and TDD, see TS 25.224) and read its system information, in order to find out which PLMN the cell belongs to. If the UE can read the PLMN identity, the found PLMN shall be reported to the NAS as a high quality PLMN (but without the RSCP value), provided that the following high quality criterion is fulfilled:

   - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.

   - For a TDD cell, the measured P-CCPCH RSCP shall be greater than or equal to –84 dBm.

   Found PLMNs that do not satisfy the high quality criterion, but for which the UE has been able to read the PLMN identities are reported to the NAS together with the CPICH RSCP value for UTRA FDD cells and P-CCPCH RSCP for UTRA TDD cells.

References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3.1.2.
3. TS 23.122, clause 3.1.
4. TS 25.304, clause 5.1.2.2.

NOTE: TS 31.102 defines the USIM fields.

6.1.1.2.3 Test purpose

1. To verify that in Manual Network Selection Mode Procedure, the UE presents "Other PLMN/access technology combinations" in a prioritized order according to conformance requirement 2.4 and 2.5.
2. To verify that forbidden PLMNs are also displayed in the list.

6.1.1.2.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD).

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_RSCP [dBm] (FDD)	P-CCPCH_ RSCP [dBm] (TDD)	High Quality signal	Test Channel	PLMN
Cell 1	-85	-74	Yes	1	PLMN 6
Cell 2	-80	-69	Yes	2	PLMN 7
Cell 3	-80	-69	Yes	3	PLMN 8
Cell 4	-98	-87	No	4	PLMN 9
Cell 5	-101	-90	No	5	PLMN 10
Cell 6	-104	-93	No	6	PLMN 11

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		PLMN 1
$EF_{HPLMNwAcT}$	1st	PLMN 2
$EF_{PLMNwAcT}$	1st	PLMN 3
	2nd	PLMN 4
$EF_{OPLMNwAcT}$	1st	PLMN 5
	2nd	PLMN 6
EF_{FPLMN}	PLMN 10	

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) PLMN 9 shall be selected when the PLMN list is presented.

d) The SS waits for random access requests from the UE.

e) Cell 4 is switched off.

f) PLMN 7 shall be selected when the PLMN list is presented.

g) The SS waits for random access requests from the UE.

h) Cell 2 is switched off.

i) PLMN 6 shall be selected when the PLMN list is presented.

j) The SS waits for random access requests from the UE.

k) Cell 1 is switched off.

l) PLMN 11 shall be selected when the PLMN list is presented.

m) The SS waits for random access requests from the UE.

n) Cell 6 is switched off.

o) PLMN 10 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

p) Cell 5 is switched off.

q) PLMN 8 shall be selected (the list is already available)

r) The SS waits for random access requests from the UE.

s) Cell 3 is switched off.

6.1.1.2.5 Test Requirements

1) In step c), the list shall be presented. The priority shall be as follows: PLMN 6 followed by PLMN 7, PLMN 8 in random order, followed by PLMN 9, PLMN 10, PLMN 11.

2) In step d), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 9.

3) In step f), the list shall be presented. The priority shall be as follows: PLMN 6 followed by PLMN 7, PLMN 8 in random order, followed by PLMN 10, PLMN 11.

4) In step g), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 7.

5) In step i), the list shall be presented. The priority shall be as follows: PLMN 6, PLMN 8, PLMN 10, PLMN 11.

6) In step j), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 6.

7) In step l), the list shall be presented. The priority shall be as follows: PLMN 8, PLMN 10, PLMN 11.

8) In step m), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 11.

9) In step o), the list shall be presented. The priority shall be as follows: PLMN 8, PLMN 10. After PLMN 10 has been selected, the list shall appear again as the UE cannot perform registration.

10) In step q), the list shall be presented and shall only contain PLMN 8.

11) In step r), the UE shall respond on Cell 3. The displayed PLMN shall be PLMN 8.

12) After step s), the UE shall inform that no network is available.

6.1.1.3 PLMN selection; independence of RF level and preferred PLMN; Manual mode

6.1.1.3.1 Definition

Test to verify that in Manual Network Selection Mode, the UE is able to obtain normal service on a PLMN which is neither the better nor a preferred PLMN and that it tries to obtain service on a VPLMN if and only if the user selects it manually.

6.1.1.3.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   2.1 HPLMN;

   2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.4 Other PLMN/access technology combinations with received high quality signal in random order;

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3.1.2

NOTE: TS 31.102 defines the USIM fields.

6.1.1.3.3 Test purpose

1. To verify that the selected PLMN at switch-on is the HPLMN.
2. To verify that in Manual Network Selection Mode Procedure the UE tries to obtain service on a VPLMN if and only if the user selects it manually.
3. To verify that the UE is able to obtain normal service on a PLMN which is neither the better nor a prefered PLMN.

6.1.1.3.4 Method of investigation

Initial conditions

The UE is in manual PLMN selection mode.

"IMSI attach" flag in the BCCH is set to allowed.

For FDD only:

Step a-d:

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	2	3
CPICH_Ec/Io	dB	-12	-15	OFF
Qqualmin	dB	-20	-20	-20
Squal*	dB	8	5	-
PLMN		1	2	3

Step e-f:

CPICH_Ec/Io		-12 -> OFF	-15	OFF

Step g-h:

CPICH_Ec/Io		OFF	-15	OFF -> -12

Step i-l:

CPICH_Ec/Io		OFF	-15 -> OFF	-12

For TDD only:

Step a-d:

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	2	3
P-CCPCH RSCP	dBm	-69	-72	OFF
Qrxlevmin	dBm	-103~~[TBD]~~	-103~~[TBD]~~	-103~~[TBD]~~
Srxlev*	dB	34~~[TBD]~~	31~~[TBD]~~	-~~[TBD]~~
PLMN		1	2	3

Step e-f:

P-CCPCH RSCP		-69 -> OFF	-72	OFF

Step g-h:

P-CCPCH RSCP		OFF	-72	OFF -> -69

Step i-l:

P-CCPCH RSCP		OFF	-72 -> OFF	-69

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		
$EF_{HPLMNwAcT}$	1st	PLMN 1
$EF_{PLMNwAcT}$	1st	PLMN 3

Test procedure

Method C is applied.

a) The SS activates cells 1 and 2.

b) The UE is switched on.

c) PLMN 1 is selected manually.

d) The SS waits for random access requests from the UE. A complete Location Update is done.

e) Cell 1 is switched off.

f) The SS waits to see if there is any random access request from the UE.

g) Cell 3 is switched on.

h) The SS waits to see if there is any random access request from the UE.

i) PLMN 2 is selected manually.

j) The SS waits for random access requests from the UE. A complete Location Update is done.

k) Cell 2 is switched off.

l) The SS waits to see if there is any random access request from the UE.

6.1.1.3.5 Test Requirements

1) In step d), there shall be a response on Cell 1. The selected PLMN shall be PLMN 1.

2) In step f), there shall be no response from the UE within 2 min.

3) In step h), there shall be no response from the UE within 2 min.

4) In step j), there shall be a response on Cell 2. The selected PLMN shall be PLMN 2.

5) In step l), there shall be no response from the UE within 2 min.

6.1.1.4 PLMN selection of RPLMN, HPLMN, UPLMN and OPLMN; Automatic mode

6.1.1.4.1 Definition

Test to verify that in Automatic Network Selection Mode, the UE selects PLMNs in a prioritized order. Forbidden PLMNs shall not be selected. If available, the RPLMN shall be selected at switch-on, otherwise the list shall include in priority order HPLMN, User-PLMN and Operator-PLMN. The last priority in the list is "Other PLMN/access technology combinations" which is not included in this test.
Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

6.1.1.4.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

2.1 HPLMN (if not previously selected);

2.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

2.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

2.4 Other PLMN/access technology combinations with received high quality signal in random order;

2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden PLMNs" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3.1.1.
3. TS 23.122, clause 3.1.

NOTE: TS 31.102 defines the USIM fields.

6.1.1.4.3 Test purpose

1. To verify that if available, the RPLMN is selected at switch-on.
2. To verify that in Automatic Network Selection Mode Procedure, the UE selects the RPLMN, HPLMN, UPLMN and OPLMN in a prioritized order.
3. To verify that forbidden PLMNs are not selected.

6.1.1.4.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP. Cell levels are from table 6.3 (FDD).

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_ RSCP [dBm] (FDD)	P-CCPCH_ RSCP [dBm] (TDD)	Test Channel	PLMN
Cell 1	-72	-61~~[TBD]~~	1	PLMN 1
Cell 2	-75	-64~~[TBD]~~	2	PLMN 2
Cell 3	-78	-67~~[TBD]~~	3	PLMN 3
Cell 4	-81	-70~~[TBD]~~	4	PLMN 4
Cell 5	-84	-73~~[TBD]~~	5	PLMN 5
Cell 6	-87	-76~~[TBD]~~	6	PLMN 6

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		PLMN 1
$EF_{HPLMNwAcT}$	1st	PLMN 2
$EF_{PLMNwAcT}$	1st	PLMN 3
	2nd	PLMN 4
$EF_{OPLMNwAcT}$	1st	PLMN 5
	2nd	PLMN 6
EF_{FPLMN}	PLMN 3	

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) Cell 1 is switched off.

e) The SS waits for random access requests from the UE.

f) Cell 2 is switched off.

g) The SS waits for random access requests from the UE.

i) Cell 4 is switched off.

j) The SS waits for random access requests from the UE.

k) Cell 5 is switched off.

l) The SS waits for random access requests from the UE.

m) Cell 6 is switched off.

6.1.1.4.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 1.

2) In step e), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 2.

3) In step g), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 4.

4) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN 5.

5) In step l), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 6.

6) After step m), the UE shall inform that only limited service is possible

6.1.1.5 PLMN selection of "Other PLMN / access technology combinations"; Automatic mode

6.1.1.5.1 Definition

Test to verify that in Automatic Network Selection Mode, the UE selects PLMNs in a prioritized order. Forbidden PLMNs shall not be selected. In this test are only considered "Other PLMN/access technology combinations" in the priority list.
Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

6.1.1.5.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   2.1 HPLMN (if not previously selected);

   2.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.4 Other PLMN/access technology combinations with received high quality signal in random order;

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   In 2.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

   If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden PLMNs" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

4. The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the strongest cell according to the cell search procedures (for FDD, see TS 25.214, and TDD, see TS 25.224) and read its system information, in order to find out which PLMN the cell belongs to. If the UE can read the PLMN identity, the found PLMN shall be reported to the NAS as a high quality PLMN (but without the RSCP value), provided that the following high quality criterion is fulfilled:

   - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.

   - For a TDD cell, the measured P-CCPCH RSCP shall be greater than or equal to –84 dBm.

   Found PLMNs that do not satisfy the high quality criterion, but for which the UE has been able to read the PLMN identities are reported to the NAS together with the CPICH RSCP value for UTRA FDD cells and P-CCPCH RSCP for UTRA TDD cells.

References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3.1.1.
3. TS 23.122, clause 3.1.
4. TS 25.304, clause 5.1.2.2.

NOTE: TS 31.102 defines the USIM fields.

6.1.1.5.3 Test purpose

1. To verify that in Automatic Network Selection Mode Procedure, the UE selects "Other PLMN/access technology combinations" in a prioritized order according to conformance requirement 2.4 and 2.5.
2. To verify that forbidden PLMNs are not selected.

6.1.1.5.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD).

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_RSCP [dBm] (FDD)	P-CCPCH_ RSCP [dBm] (TDD)	High Quality signal	Test Channel	PLMN
Cell 1	-85	-74	Yes	1	PLMN 6
Cell 2	-80	-69	Yes	2	PLMN 7
Cell 3	-80	-69	Yes	3	PLMN 8
Cell 4	-98	-87	No	4	PLMN 9
Cell 5	-101	-90	No	5	PLMN 10
Cell 6	-104	-93	No	6	PLMN 11

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		PLMN 1
$EF_{HPLMNwAcT}$	1st	PLMN 2
$EF_{PLMNwAcT}$	1st	PLMN 3
	2nd	PLMN 4
$EF_{OPLMNwAcT}$	1st	PLMN 5
	2nd	PLMN 6
EF_{FPLMN}	PLMN 10	

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) Cell 1 is switched off.

e) The SS waits for random access requests from the UE.

f) The cell associated to the currently shown PLMN shall be switched off.

g) The SS waits for random access requests from the UE.

h) The cell associated to the currently shown PLMN shall be switched off.

i) The SS waits for random access requests from the UE.

j) Cell 4 is switched off.

k) The SS waits for random access requests from the UE.

l) Cell 6 is switched off.

6.1.1.5.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 6.

2) In step e), the response from the UE shall be on either Cell 2 or 3. The displayed PLMN shall be the one associated with the cell on which the response was received.

3) In step g), the response from the UE shall be on either Cell 2 or 3 (excluding the cell in step 2). The displayed PLMN shall be the one associated with the cell on which the response was received.

4) In step i), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 9.

5) In step k), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 11.

6) After step l), the UE shall inform that only limited service is possible.

6.1.1.6 UE will transmit only if PLMN available

6.1.1.6.1 Definition

Test to verify that the UE will not generate any RF output if no PLMN is available.

6.1.1.6.2 Conformance requirement

[FFS: Currently no requirements exist in core specs.]

6.1.1.6.3 Test purpose

1. To verify that the UE does not give any "Service indication" when no PLMN is available.
2. To verify that the UE will not generate any RF output when no PLMN is available.

6.1.1.6.4 Method of test

Initial conditions

For FDD only:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-13	-15	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	5	3

For TDD only:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-71	-73
Qrxlevmin	dBm	-103~~[TBD]~~	-103~~[TBD]~~	-103~~[TBD]~~
Srxlev*	dB	34~~[TBD]~~	32~~[TBD]~~	30~~[TBD]~~

Test procedure

Method C is applied.

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE.

d) Cells 1-3 are switched off.

e) The SS shall wait 20 s to allow the UE to detect the loss of cells.

f) By MMI, an attempt to originate a call is made.

g) By MMI, an attempt to originate an emergency call is made (only if UE supports speech).

6.1.1.6.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step f) and g), the UE shall not produce any RF output, neither give any "service indication" within 2 min.

6.1.2 Cell selection and reselection

6.1.2.1 Cell reselection

6.1.2.1.1 Definition

Test to verify that the UE performs the cell reselection correctly for intra/inter-frequency cells if the serving cell becomes barred or S<0.

6.1.2.1.2 Conformance requirement

1. When camped on a cell, the UE shall regularly search for a better cell according to the cell reselection criteria. If a better cell is found, that cell is selected. The change of cell may imply a change of RAT.

2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.

   2.1 The cell is part of the selected PLMN or of a PLMN considered as equivalent by the UE according to the information provided by the NAS.

   2.2 The cell is not barred.

   2.3 The cell is not part of the list of "forbidden LAs for roaming".

   2.4 The cell selection criteria are fulfilled.

3. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   3.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.

   3.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.

4. Cell Reselection Criteria:

   4.1 The UE shall perform ranking of all cells that fulfil the S criterion.

   4.2 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.

   4.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   4.4 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME. However, $TEMP\_OFFSET_n$ and $PENALTY\_TIME_n$ are only applicable if the usage of HCS is indicated in system information.

5. When cell status "barred" is indicated, the UE shall select another cell according to the following rule:

5.1 If the "Intra-frequency cell re-selection indicator" IE in Cell Access Restriction IE is set to value "allowed", the UE may select another cell on the same frequency if selection/re-selection criteria are fulfilled.

5.2 If the "Intra-frequency cell re-selection indicator" IE is set to "not allowed" the UE shall not re-select a cell on the same frequency as the barred cell. For emergency call, the Intra-frequency cell re-selection indicator IE" shall be ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

References

1. TS 25.304, clause 5.2.1.
2. TS 25.304, clause 4.3.
3. TS 25.304, clause 5.2.5.1.
4. TS 25.304, clause 5.2.6.1.4.
5. TS 25.304, clause 5.3.1.1.

6.1.2.1.3 Test purpose

1. To verify that the UE performs cell reselection on the following occasions:

   1.1 Serving cell becomes barred;

   1.2 S<0 for serving cell.

2. To verify conformance requirement 5.

NOTE: Reselection triggered by the cell becoming a part of a forbidden registration area is tested in clause 9.4.2.3 and clause 9.4.2.4.

6.1.2.1.4 Method of test

Initial conditions

Treselection, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME are not used, so the cell-ranking criterion R equals CPICH_Ec/Io for FDD cells, and P-CCPCH RSCP for TDD cells.

Step a-c (FDD):

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	1	2
CPICH_Ec/Io	dB	-13	-15	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	5	3
Intra-frequency cell re-selection indicator		Not Allowed	Not Allowed	Not Allowed
CellBarred		0	0	0

Step a-c (TDD):

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-71	-73
Qrxlevmin	dBm	-103	-103	-103
Srxlev*	dB	34	32	30

Step d-f:

CellBarred		0->1	0	0

Step g-h:

Intra-frequency cell re-selection indicator		Not Allowed -> Allowed	Not Allowed -> Allowed	Not Allowed -> Allowed

Step i (FDD):

Qqualmin	dB	-20 -> -10	-20	-20
Squal*	dB	7 -> -3	5	3

Step i (TDD):

Qrxlevmineas		-103 -> -68 ~~[TBD]~~	-103~~[TBD]~~	-103~~[TBD]~~
Srxlev*		34 -> -6 ~~[TBD]~~	32~~[TBD]~~	30~~[TBD]~~

Test procedure

Method B is applied.

a) The SS activates Cell 1-3 and monitors them for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) The SS sets Cell 1 to be barred.

e) The SS waits for random access requests from the UE.

f) The SS sets "Intra-frequency cell re-selection indicator" to "Allowed".

g) The SS waits for random access requests from the UE.

h) The stored information cell selection list in the UE is deleted and the UE is switched off.

i) Step a-e) is repeated except that in step d) for FDD cells, Qqualmin is increased to -10 dB, or in step d) for TDD cells, Qrxlevmineas is increased to -68~~[TBD]~~, so S will become negative instead of the cell being barred while maintaining the same RF level.

6.1.2.1.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 3.

3) In step g), the UE shall respond on Cell 2.

4) In step i), the UE shall respond on Cell 2.

6.1.2.2 Cell reselection using Qhyst, Qoffset and Treselection

6.1.2.2.1 Definition

Test to verify that the UE performs the cell reselection correctly if system information parameters Qoffset, Qhyst and Treselection are applied for non-hierarchical cell structures. TEMP_OFFSET and PENALTY_TIME are only applicable when HCS is applied and are tested in clauses 6.1.2.4 and 6.1.2.5.

6.1.2.2.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   1.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.

   1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.

2. Cell Reselection Criteria:

   2.1 The UE shall perform ranking of all cells that fulfil the S criterion.

   2.2 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.

   2.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   2.4 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME. However, TEMP_OFFSETn and PENALTY_TIMEn are only applicable if the usage of HCS is indicated in system information.

References

1. TS 25.304, clause 5.2.5.1.
2. TS 25.304, clause 5.2.6.1.4.

6.1.2.2.3 Test purpose

1. To verify that the UE calculates R from Qhyst and Qoffset and that the modification of these parameters on the BCCH triggers the cell reselection evaluation process. TEMP_OFFSET and PENALTY_TIME are not applied.
2. To verify that the UE reselects the new cell, if the cell reselection criteria are fulfilled during a time interval Treselection.

6.1.2.2.4 Method of test

Initial conditions

For FDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2
CPICH_Ec/Io	dB	-12	-15
Qqualmin	dB	-20	-20
Squal*	dB	8	5
$Qhyst2_s$	dB	10	
R_s*	dB	-2	
R_n*	dB	-15	

Step d-e:

CPICH_Ec/Io	dB	-12 -> -15	-15 -> -12
R_s*	dB	-2 -> -5	
R_n*	dB	-15 -> -12	

Step f-g:

$Qhyst2_s$	dB	10 -> 0	
R_s*	dB	-5 -> -15	
R_n*	dB	-12	

Step h-j:

CPICH_Ec/Io	dB	-12	-15
$Qoffset2_{s,n}$	dB	10	
R_s*	dB	-12	
R_n*	dB	-25	

Step k-l:

CPICH_Ec/Io	dB	-12 -> -15	-15 -> -12
R_s*	dB	-12 -> -15	
R_n*	dB	-25 -> -22	

Step m-n:

$Qoffset2_{s,n}$	dB	10 -> 0	
R_s*	dB	-15	
R_n*	dB	-22 -> -12	

Step o-p:

$Treselection_s$	s	30	

For TDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2
P-CCPCH RSCP	dBm	-68	-71
$Qhyst1_s$	dB	10	
R_s*	dB	-58	
R_n*	dB	-71	

Step d-e:

P-CCPCH RSCP	dBm	-68 -> -71	-71 -> -68
R_s*	dB	-58 -> -61	
R_n*	dB	-71 -> -68	

Step f-g:

$Qhyst1_s$	dB	10 -> 0	
R_s*	dB	-61 -> -71	
R_n*	dB	-68	

Step h-j:

P-CCPCH RSCP	dBm	-68	-71
$Qoffset1_{s,n}$	dB	10	
R_s*	dB	-68	
R_n*	dB	-81	

Step k-l:

P-CCPCH RSCP	dBm	-68 -> -71	-71 -> -68
R_s*	dB	-68 -> -71	
R_n*	dB	-81 -> -78	

Step m-n:

$Qoffset1_{s,n}$	dB	10 -> 0	
R_s*	dB	-71	
R_n*	dB	-78 -> -68	

Step o-p:

$Treselection_s$	s	30	

Test procedure

Method B is applied.

a) The SS activates Cell 1 and 2 and monitors them for random access requests from the UE.

b) The UE is switched on.

c) The SS waits to see if there is any random access requests from the UE.

d) The SS changes the level of Cell 1 and 2 and waits for 10 s (TS 25.133, A.4.2.1.2 for FDD mode and TS 25.123, A.4.2.1.2 for TDD mode).

e) The SS waits for random access requests from the UE.

f) The SS resets Qhyst for Cell 1.

g) The SS waits for random access requests from the UE.

h) The stored information cell selection list in the UE is deleted and the UE is switched off.

i) The UE is switched on.

j) The SS waits to see if there is any random access requests from the UE.

k) The SS changes the level of Cell 1 and 2 and waits for 10 s (TS 25.133, clause A.4.2.1.2 for FDD mode and TS 25.123, clause A.4.2.1.2 for TDD mode).

l) The SS waits for random access requests from the UE.

m) The SS resets Qoffset for Cell 1.

n) The SS waits for random access requests from the UE.

o) Step h-n) is repeated except that Treselection is 30 s

6.1.2.2.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall keep responding on Cell 1.

3) In step g), the UE shall respond on Cell 2.

4) In step j), the UE shall select a cell to camp on and eventually make a reselection to Cell 1.

5) In step l), the UE shall keep responding on Cell 1.

6) In step n), the UE shall respond on Cell 2.

7) In step o), the UE shall respond as in previous steps except that when reselecting to Cell 2, there shall be no response from the UE on Cell 2 within 28 s of broadcasting Qoffset but the UE shall respond on Cell 2 within 34 s.

NOTE: Minimum time set by Treselection – 2 s tolerance. Maximum time set by Treselection + 1 280 msec. for DRX cycle + 2 s tolerance

6.1.2.3 HCS Cell reselection

6.1.2.3.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures. This shall be done according to the HCS priority, the received signal quality value Q and the quality level threshold criterion H.

6.1.2.3.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   1.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.

   1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.

2. Cell Reselection Criteria for hierarchical cells:

   2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q, Qhcs, TEMP_OFFSET and PENALTY_TIME parameters.

   2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells that have the highest HCS_PRIO among those cells that fulfil the criterion H >= 0.

   2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.

   2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   2.5 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET, PENALTY_TIME.

References

1. TS 25.304, clause 5.2.2.

2. TS 25.304, clause 5.2.6.1.4.

6.1.2.3.3 Test purpose

1. Verify that the UE ignores cells with H<0 for reselection and that H is calculated from Qhcs. The modification of this parameter on the BCCH shall trigger the cell reselection evaluation process.

2. Verify that the UE ranks cells based on both HCS priority and R. Qhyst, Qoffset, TEMP_OFFSET, PENALTY_TIME and Treselection are not applied so R equals CPICH_Ec/Io for FDD cells, and P-CCPCH RSCP for TDD cells.

6.1.2.3.4 Method of test

Initial conditions

For FDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-13	-15	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	5	3
HCS priority		6	7	7
$Qhcs_s$	dB	-24	-10	-10
H_s*	dB	11	-5	-7

Step d-e:

$Qhcs_s$	dB	-24	-10	-10 -> -24
H_s*	dB	11	-5	-7 -> 7

Step f-g:

$Qhcs_s$	dB	-24	-10 -> -24	-24
H_s*	dB	11	-5 -> 9	7

For TDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-71	-73
HCS priority		6	7	7
$Qhcs_s$	dB	-30	-10	-10
H_s*	dB	-39	-61	-63

Step d-e:

$Qhcs_s$	dB	-30	-10	-10 -> -30
H_s*	dB	-39	-61	-63 -> -43

Step f-g:

$Qhcs_s$	dB	-30	-10 -> -30	-30
H_s*	dB	-39	-61 -> -41	-43

Test procedure

Method B is applied.

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) The SS changes Qhcs for Cell 3.

e) The SS waits for random access requests from the UE.

f) The SS changes Qhcs for Cell 2.

g) The SS waits for random access requests from the UE.

6.1.2.3.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 3.

3) In step g), the UE shall respond on Cell 2.

6.1.2.4 HCS Cell reselection using reselection timing parameters for the H criterion

6.1.2.4.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures using TEMP_OFFSET and PENALTY_TIME applied to the H criterion.

6.1.2.4.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   1.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.

   1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.

2. Cell Reselection Criteria for hierarchical cells:

   2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q, Qhcs, TEMP_OFFSET and PENALTY_TIME parameters.

   2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells that have the highest HCS_PRIO among those cells that fulfil the criterion H >= 0.

   2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.

   2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   2.5 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME.

3. $TEMP\_OFFSET_n$ applies an offset to the H criteria for the duration of $PENALTY\_TIME_n$ after the timer T_n has started for that cell. T_n shall be started from zero when $Q_{meas,n} > Qhcs_n$. TEMP_OFFSET is only applied to the H criteria if the cells have different HCS priorities.

References

1. TS 25.304, clause 5.2.2.

2,3. TS 25.304, clause 5.2.6.1.4.

6.1.2.4.3 Test purpose

1. Verify that TEMP_OFFSET is applied to the H criterion for a period of PENALTY_TIME and that the timer is started when $Q_{meas,n} > Qhcs_n$ if serving and neighbour cell have different HCS priorities.

6.1.2.4.4 Method of test

Initial conditions

For FDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-13	-17	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	3	3
HCS priority		2	4	7
$Qhcs_s$	dB	-20		
$Qhcs_{n=2}$	dB	-10		
$Qhcs_{n=3}$	dB	-10		
$TEMP\_OFFSET2_{n=2}$	dB	10		
$TEMP\_OFFSET2_{n=3}$	dB	10		
H_s*	dB	7		
$H_{n=2}$*	dB	-7		
$H_{n=3}$*	dB	-7		
$PENALTY\_TIME_{n=2}$	sec	40		
$PENALTY\_TIME_{n=3}$	sec	60		

Step d-e:

$Qhcs_s$	dB	-20		
$Qhcs_{n=2}$	dB	-10 -> -20		
$Qhcs_{n=3}$	dB	-10 -> -20		
H_s*	dB	7		
$H_{n=2}$*	dB	-7 -> 3 (after 40 sec)		
$H_{n=3}$*	dB	-7 -> 3 (after 60 sec)		

For TDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-73	-73
HCS priority		2	4	7
$Qhcs_s$	dB	-20		
$Qhcs_{n=2}$	dB	-10		
$Qhcs_{n=3}$	dB	-10		
$TEMP\_OFFSET2_{n=2}$	dB	10		
$TEMP\_OFFSET2_{n=3}$	dB	10		
H_s*	dB	-49		
$H_{n=2}$*	dB	-63		
$H_{n=3}$*	dB	-63		
$PENALTY\_TIME_{n=2}$	sec	40		
$PENALTY\_TIME_{n=3}$	sec	60		

Step d-e:

$Qhcs_s$	dB	-20		
$Qhcs_{n=2}$	dB	-10 -> -20		
$Qhcs_{n=3}$	dB	-10 -> -20		
H_s*	dB	-49		
$H_{n=2}$*	dB	-63 -> -53 (after 40 sec)		
$H_{n=3}$*	dB	-63 -> -53 (after 60 sec)		

Test procedure

Method B is applied.

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) The SS changes Qhcs for Cell 2 and 3.

e) The SS waits for random access requests from the UE.

6.1.2.4.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), there shall be no response from the UE on Cell 2 within 38 s of changing the parameters but the UE shall respond on Cell 2 within 44 s. There shall be no response from the UE on Cell 3 within 58 s of changing the parameters but the UE shall respond on Cell 3 within 64 s.

NOTE: Minimum time set by PENALTY_TIME (cell 2) - 2 s tolerance. Maximum time set by PENALTY_TIME (cell 2) + 1 280 msec. for DRX cycle + 2 s tolerance. Same calculation for Cell 3.

6.1.2.5 HCS Cell reselection using reselection timing parameters for the R criterion

6.1.2.5.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures using TEMP_OFFSET and PENALTY_TIME applied to the R criterion.

6.1.2.5.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   1.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.

   1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.

2. Cell Reselection Criteria for hierarchical cells:

   2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q, Qhcs, TEMP_OFFSET and PENALTY_TIME parameters.

   2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells, not considering HCS priority levels, if no cell fulfil the criterion H>=0.

   2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If a FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.

   2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   2.5 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET, PENALTY_TIME.

3. $TEMP\_OFFSET_n$ applies an offset to the R criteria for the duration of $PENALTY\_TIME_n$ after the timer T_n has started for that cell. T_n shall be started from zero when $Q_{meas,n} > Q_{meas,s} + Qoffset2_{s,n}$. TEMP_OFFSET is only applied to the R criteria if the cells have identical priorities.

References

1. TS 25.304, clause 5.2.2.

2,3. TS 25.304, clause 5.2.6.1.4.

6.1.2.5.3 Test purpose

1. Verify that TEMP_OFFSET is applied to the R criterion for a period of PENALTY_TIME and that the timer is started when $Q_{meas,n} > Q_{meas,s} + Qoffset2_{s,n}$ if serving and neighbour cell have identical HCS priorities.

6.1.2.5.4 Method of test

Initial conditions

For FDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-15	-17	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	5	3	3
HCS priority		1	1	1
$TEMP\_OFFSET2_{n=2}$	dB	10		
$TEMP\_OFFSET2_{n=3}$	dB	10		
$PENALTY\_TIME_{n=2}$	sec	40		
$PENALTY\_TIME_{n=3}$	sec	60		
H_s*	dB	-15		
$H_{n=2}$*	dB	-17		
$H_{n=3}$*	dB	-17		
R_s*	dB	-15		
$R_{n=2}$*	dB	-17		
$R_{n=3}$*	dB	-17		

Step d-e:

CPICH_Ec/Io	dB	-15 -> -17	-17 -> -15	-17 -> -13
R_s*	dB	-17		
$R_{n=2}$*	dB	-25 -> -15 (after 40 sec)		
$R_{n=3}$*	dB	-23 -> -13 (after 60 sec)		

For TDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-73	-73
HCS priority		1	1	1
H_s*	dB	-69		
$H_{n=2}$*	dB	-73		
$H_{n=3}$*	dB	-73		
R_s*	dB	-69		
$R_{n=2}$*	dB	-73		
$R_{n=3}$*	dB	-73		

Step d-e:

$Qoffset1_{s,n=2}$	dB	0 -> -10		
$Qoffset1_{s,n=3}$	dB	0 -> -10		
$TEMP\_OFFSET1_{n=2}$	dB	10		
$TEMP\_OFFSET1_{n=3}$	dB	10		
$PENALTY\_TIME_{n=2}$	sec	40		
$PENALTY\_TIME_{n=3}$	sec	60		
R_s*	dB	-13		
$R_{n=2}$*	dB	-73 -> -63 (after 40 sec)		
$R_{n=3}$*	dB	-73 -> -63 (after 60 sec)		

Test procedure

Method B is applied.

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) The SS changes the level of Cell 1-3.

e) The SS waits for random access requests from the UE.

6.1.2.5.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), there shall be no response from the UE on Cell 2 within 38 s of changing the parameters but the UE shall respond on Cell 2 within 50 s. There shall be no response from the UE on Cell 3 within 58 s of changing the parameters but the UE shall respond on Cell 3 within 70 s.

NOTE: Minimum time set by PENALTY_TIME (cell 2) – 2 s tolerance. Maximum time set by PENALTY_TIME (cell 2) + 6.4 s ($T_{evaluateFDD}$ from TS 25.133, table 4.1 for FDD mode and $T_{evaluateTDD}$ from TS 25.123, table 4.1 for TDD mode) + 1 280 msec. for system info scheduling + 2 s tolerance. Same calculation for Cell 3.

6.1.2.6 Emergency calls

6.1.2.6.1 Definition

Test to verify that the UE shall be able to initiate emergency calls when no suitable cells of the selected PLMN are available, but at least one acceptable cell is available.

6.1.2.6.2 Conformance requirement

1. Acceptable cell:

   An "acceptable cell" is a cell on which the UE may camp to obtain limited service (originate emergency calls). Such a cell shall fulfil the following requirements, which is the minimum set of requirements to initiate an emergency call in a UTRAN network:

   1.1 The cell is not barred;

   1.2 The cell selection criteria are fulfilled.

2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.

   2.1 The cell is part of the selected PLMN or, of a PLMN considered as equivalent by the UE according to the information provided by the NAS.

   2.2 The cell is not barred.

   2.3 The cell is not part of the list of "forbidden LAs for roaming".

   2.4 The cell selection criteria are fulfilled.

3. If the UE is unable to find any suitable cell of selected PLMN the UE shall enter the *Any cell selection* state.

4. Any Cell Selection State: In this state, the UE shall attempt to find an acceptable cell of an any PLMN to camp on, trying all RATs that are supported by the UE and searching first for a high quality cell. The UE, which is not camped on any cell, shall stay in this state until an acceptable cell is found.

5. Camped on Any Cell State: In this state the UE obtains limited service. The UE shall regularly attempt to find a suitable cell of the selected PLMN, trying RATs that are supported by the UE. If a suitable cell is found, this causes an exit to the Camped normally State.

6. In the Camped on Any Cell State, the UE shall perform the cell reselection evaluation process on the following occasions/triggers:

   6.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and TS 25.123 for TDD mode.

   6.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.

References

1. TS 25.304, clause 4.3.
2. TS 25.304, clause 4.3.
3. TS 25.304, clause 5.2.2.1.
4. TS 25.304, clause 5.2.8.
5. TS 25.304, clause 5.2.2.5.
6. TS 25.304, clause 5.2.9.1.

6.1.2.6.3 Test purpose

1. To verify that the UE shall be able to initiate emergency calls when no suitable cells of the selected PLMN are available, but at least one acceptable cell is available.
2. To verify that the UE selects a cell with S>0 and CellBarred = 0 (acceptable cell) when no suitable cells of the selected PLMN are available.
3. To verify that the UE ranks the acceptable cells according to the cell-ranking criterion R which in this test case equals Q as Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME parameters are not used. Treselection is not used either.

6.1.2.6.4 Method of test

Initial conditions

In step a-d, Cell 1 and 2 are neither suitable nor acceptable cells. Cell 3 is an acceptable cell but not suitable.
In step e-f, both Cell 1 and 3 are acceptable cells.

Step a-d:

For FDD only:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-15	-13	-17
Qqualmin	dB	-20	-10	-20
Squal*	dB	5	-3	3
CellBarred		1	0	0
PLMN		forbidden	forbidden	forbidden

For TDD only:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-77	-71
CellBarred		1	0	0
PLMN		forbidden	forbidden	forbidden

Step e-f:

CellBarred		1 -> 0	0	0

NOTE: All the BCCH cells belong to the same PLMN, which is not the UE's home PLMN and is in the USIM's forbidden PLMN's list.

Test procedure

Method C is applied.

a) The SS activates the cells and monitors them for random access requests from the UE.

b) The UE is switched on.

c) 50 s after switch on, an emergency call is initiated on the UE.

d) The SS waits for random access request from the UE.

e) The SS changes the CellBarred of Cell 1 to 0.

f) After 30 s an emergency call is initiated on the UE.

g) The SS waits for random access request from the UE.

6.1.2.6.5 Test requirements

1) In step d), the first access from the UE shall be on Cell 3.

2) In step g), the first access from the UE shall be on Cell 1.

6.1.2.7 Emergency calls; Intra-frequency cell "Not allowed"

6.1.2.7.1 Definition

Test to verify that for emergency call and cell status "barred", the Intra-frequency cell re-selection indicator IE is ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

6.1.2.7.2 Conformance requirement

1. When cell status "barred" is indicated:

   - The UE is not permitted to select/re-select this cell, not even for emergency calls.

   - The UE shall select another cell according to the following rule:

- If the "Intra-frequency cell re-selection indicator" IE is set to "not allowed" the UE shall not re-select a cell on the same frequency as the barred cell. For emergency call, the Intra-frequency cell re-selection indicator IE" shall be ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

References

1. TS 25.304, clause 5.3.1.1.

6.1.2.7.3 Test purpose

To verify that for emergency call and cell status "barred", the Intra-frequency cell re-selection indicator IE is ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

6.1.2.7.4 Method of test

Initial conditions

Cell 1 and 2 are on the same carrier frequency.

Step a-c:

For FDD only:

Parameter	Unit	Cell 1	Cell 2
CPICH_Ec/Io	dB	-13	-15
Qqualmin	dB	-20	-20
Squal*	dB	7	5
Intra-frequency cell re-selection indicator		Not allowed	Not allowed
CellBarred		0	0

For TDD only:

Parameter	Unit	Cell 1	Cell 2
P-CCPCH RSCP	dBm	-77	-69
CellBarred	dBm	0	0

Step d-i:

CellBarred		0 -> 1	0

Test procedure

Method C is applied.

a) The SS activates the cells and monitors them for any random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE.

d) The SS sets Cell 1 to be barred.

e) The SS waits to see if there is any random access request from the UE.

f) By MMI, an attempt to originate a call is made.

g) The SS waits to see if there is any random access request from the UE.

h) By MMI, an emergency call is initiated on the UE.

i) The SS waits for random access request from the UE.

6.1.2.6.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall nor respond on any other cell within 1 min.

2) In step e), there shall be no response from the UE within 2 min.

3) In step g), there shall be no response from the UE within 2 min. It shall not be possible to originate the call.

4) In step i), the UE shall respond on Cell 2. It shall be possible to originate the emergency call.

3GPP TSG-T1 Meeting #13
Cancun, Mexico, 29th – 30th November 2001

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3GPP TSG-T1/SIG SWG Meeting #20
Cancun, Mexico, 26th – 28th November 2001

Tdoc TSG T1S-010326r1

CR-Form-v3

CHANGE REQUEST

⌘ **34.123-1** **CR** 118 ⌘ rev ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Idle Mode Test Parameters for Multi-mode environment (2G/3G) for TDD
Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	26.11.01
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	Test cases for multi-mode environment (2G/3G) are modified to consider test requirements of for TDD UE.
Summary of change:	⌘	• TDD specific parameters are introduced to those tests where parameter values are explicitly listed. • Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD) is pointed out. • In the main these changes take the form of adding TDD P-CCPCH RSCP test values to accompany FDD CPICH RSCP test values. • References for TDD included: Definitions of measurements are in TS 25.215 and TS 25.101 for FDD mode, in TS 25.225 and TS 25.102 for TDD mode • 6.2.2.2 Cell reselection if cell becomes barred or C1<0; GSM to UTRAN is updated according with T1S-010312 (Ericsson CR)
Consequences if not approved:	⌘	Test procedures will not be defined for the TDD.

Clauses affected:	⌘	6.2.1.1, 6.2.1.2, 6.2.1.3, 6.2.1.4, 6.2.1.5, 6.2.1.6, 6.2.1.7, 6.2.1.8, 6.2.1.9, 6.2.2.1, 6.2.2.2, 6.2.2.3
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications
	⌘	TS 34.123-2
Other comments:	⌘	This CR affects Release 99 and Release 4

6.2 Multi-mode environment (2G/3G case)

6.2.1 PLMN and RAT selection and reselection

6.2.1.1 Selection of the correct PLMN and associated RAT

6.2.1.1.1 Definition

Test to verify that the UE selects the correct combination of PLMN and associated access technology according to the fields on the USIM.

6.2.1.1.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

References

1. TS 23.122, clause 4.4.3.1.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.1.3 Test purpose

1. To verify that the UE selects the correct combination of PLMN and associated access technology according to the fields on the USIM.

6.2.1.1.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD). Cell levels are from tables 6.3 and 6.4

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH_RSCP/ RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-48	-48	1	PLMN 1	GSM
Cell 2	-72	-61	1	PLMN 1	UTRAN
Cell 3	-75	-64	2	PLMN 2	UTRAN
Cell 4	-50	-50	2	PLMN 2	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}			
$EF_{HPLMNwAcT}$	1st	PLMN 1	GSM
	2nd		UTRAN

USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}			
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) The UE is switched off and a USIM with settings according to USIM B is inserted.

e) The UE is switched on.

f) The SS waits for random access requests from the UE.

6.2.1.1.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN1 (GSM).

2) In step f), the response from the UE shall be on Cell 3. The displayed PLMN shall be PLMN2 (UTRAN).

6.2.1.2 Selection of RAT for HPLMN; Manual mode

6.2.1.2.1 Definition

Test to verify that the UE selects the HPLMN RAT according to the HPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall try to obtain registration on the same PLMN using other UE-supported RATs.

6.2.1.2.2 Conformance requirement

1. To allow provision for multiple HPLMN codes, the HPLMN access technologies are stored on the SIM together with PLMN codes. This version of the specification does not support multiple HLPMN codes and the "HPLMN Selector with Access Technology" data field is only used by the MS to get the HPLMN access technologies. The HPLMN code is the PLMN code included in the IMSI.

2. For HPLMN, the MS shall search for all access technologies it is capable of. The MS shall start its search using the access technologies stored in the "HPLMN Selector with Access Technology" data field on the SIM in priority order (i.e. the PLMN/access technology combinations are listed in priority order, if an entry includes more than one access technology then no priority is defined for the preferred access technology and the priority is an implementation issue).

3. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   3.1 HPLMN;

   3.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   3.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

3.4 Other PLMN/access technology combinations with received high quality signal in random order;

3.5 Other PLMN/access technology combinations in order of decreasing signal quality.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

References

1. TS 23.122, clause 4.4.3.
2. TS 23.122, clause 4.4.3.1.1 (f).
3. TS 23.122, clause 4.4.3.1.2.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.2.3 Test purpose

1. To verify that:

1.1 the UE searches for a HPLMN RAT according to the HPLMN Selector with Access Technology data field on the USIM in priority order.

1.2 If no RAT on the priority list is available, the UE tries to obtain registration on the same PLMN using other UE-supported RATs.

6.2.1.2.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD). Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH_RSCP/ RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 2	UTRAN
Cell 2	-48	-48	1	PLMN 2	GSM
Cell 3	-75	-64	2	PLMN 3	UTRAN
Cell 4	-50	-50	2	PLMN 3	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM

USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		

Test procedure

Method B is applied.

a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.

b) The UE is switched on.

c) PLMN2 (UTRAN) shall be selected when the PLMN list is presented.

d) The SS waits for random access requests from the UE.

e) Cell 1 is switched off.

f) PLMN2 (GSM) shall be selected when the PLMN list is presented.

g) The SS waits for random access requests from the UE.

h) The UE is switched off and a USIM with settings according to USIM B is inserted. All cells except Cell 1 are active.

i) The UE is switched on.

j) PLMN2 (GSM) shall be selected when the PLMN list is presented.

k) The SS waits for random access requests from the UE.

6.2.1.2.5 Test Requirements

1) In step c), the list shall be presented. It shall contain as highest priority PLMN2 (UTRAN as number 1 on the list and GSM as number 2).

2) In step d), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{HPLMNwAcT}$). The displayed PLMN shall be PLMN2 (UTRAN).

3) In step f), the list shall be presented. It shall contain as highest priority PLMN2 (GSM).

4) In step g), the response from the UE shall be on Cell 2 (2nd priority RAT for $EF_{HPLMNwAcT}$). The displayed PLMN shall be PLMN2 (GSM).

5) In step j), the list shall be presented. It shall contain as highest priority PLMN2 (GSM).

6) In step k), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN2 (GSM). (PLMN2 is not available on UTRAN so registration on the same PLMN is attempted using other UE-supported RATs).

6.2.1.3 Selection of RAT for UPLMN; Manual mode

6.2.1.3.1 Definition

Test to verify that the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for PLMNs in the OPLMN list.

6.2.1.3.2 Conformance requirement

1. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   1.1 HPLMN;

   1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

References

1. TS 23.122, clause 4.4.3.1.2.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.3.3 Test purpose

1. To verify that:

   1.1 the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM.

   1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN with another RAT but instead searches for PLMNs in the OPLMN list.

6.2.1.3.4 Method of test

Initial condition

The UE is in manual PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD). Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH_RSCP/ RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 3	UTRAN
Cell 2	-48	-48	1	PLMN 3	GSM
Cell 3	-75	-64	2	PLMN 4	UTRAN
Cell 4	-50	-50	2	PLMN 4	GSM
Cell 5	-78	-67	3	PLMN 5	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) PLMN3 (UTRAN) shall be selected when the PLMN list is presented.

d) The SS waits for random access requests from the UE.

e) Cell 1 is switched off.

f) PLMN4 (GSM) shall be selected when the PLMN list is presented.

g) The SS waits for random access requests from the UE.

h) Cell 4 is switched off.

i) PLMN5 (UTRAN) shall be selected when the PLMN list is presented.

j) The SS waits for random access requests from the UE.

6.2.1.3.5 Test Requirements

1) In step c), the list shall be presented. It shall contain in priority PLMN3 (UTRAN), PLMN4 (GSM), other PLMNs.

2) In step d), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{PLMNwAcT}$). The displayed PLMN shall be PLMN3 (UTRAN).

3) In step f), the list shall be presented. It shall contain in priority PLMN4 (GSM), PLMN5 (UTRAN), other PLMNs.

4) In step g), the response from the UE shall be on Cell 4 (2nd priority RAT for $EF_{PLMNwACT}$). The displayed PLMN shall be PLMN4 (GSM).

5) In step i), the list shall be presented. It shall contain as highest priority PLMN5 (UTRAN).

6) In step j), the response from the UE shall be on Cell 5 (1st priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN5 (UTRAN).

6.2.1.4 Selection of RAT for OPLMN; Manual mode

6.2.1.4.1 Definition

Test to verify that the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for other PLMN/access technology combinations with received high quality signal in random order.

6.2.1.4.2 Conformance requirement

1. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   1.1 HPLMN;

   1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

References

1. TS 23.122, clause 4.4.3.1.2.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.4.3 Test purpose

1. To verify that:

   1.1 the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM.

   1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN(s) with other RAT(s) but instead searches for "other PLMN/access technology combinations with received high quality signal in random order".

6.2.1.4.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD). Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 5	UTRAN
Cell 2	-48	-48	1	PLMN 5	GSM
Cell 3	-75	-64	2	PLMN 6	UTRAN
Cell 4	-50	-50	2	PLMN 6	GSM
Cell 5	-78	-67	3	PLMN 7	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) PLMN5 (UTRAN) shall be selected when the PLMN list is presented.

d) The SS waits for random access requests from the UE.

e) Cell 1 is switched off.

f) PLMN6 (GSM) shall be selected when the PLMN list is presented.

g) The SS waits for random access requests from the UE.

h) Cell 4 is switched off.

i) PLMN7 (UTRAN) shall be selected when the PLMN list is presented.

j) The SS waits for random access requests from the UE.

6.2.1.4.5 Test Requirements

1) In step c), the list shall be presented. It shall contain in priority PLMN5 (UTRAN), PLMN6 (GSM), other PLMNs.

2) In step d), the response from the UE shall be on Cell 1 (1^{st} priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN5 (UTRAN).

3) In step f), the list shall be presented. It shall contain as highest priority PLMN6 (GSM) followed by PLMN5 (GSM), PLMN6 (UTRAN) and PLMN7 (UTRAN) in random order.

4) In step g), the response from the UE shall be on Cell 4 (2^{nd} priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN6 (GSM).

5) In step i), the list shall be presented. It shall contain PLMN5 (GSM), PLMN6 (UTRAN) and PLMN7 (UTRAN) in random order.

6) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN7 (UTRAN).

6.2.1.5 Selection of "Other PLMN / access technology combinations"; Manual mode

6.2.1.5.1 Definition

Test to verify that if neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE first tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order" and secondly on "Other PLMN/access technology combinations in order of decreasing signal quality".

6.2.1.5.2 Conformance requirement

1. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   1.1 HPLMN;

   1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   In 1.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

2. UTRA case: The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the strongest cell according to the cell search procedures (for FDD, see TS 25.214, and TDD, see TS 25.224) and read its system information, in order to find out which PLMN the cell belongs to. If the UE can read the PLMN identity, the found PLMN shall be reported to the NAS as a high quality PLMN (but without the RSCP value), provided that the following high quality criterion is fulfilled:

   - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.
   - For a TDD cell, the measured P-CCPCH RSCP value shall be greater than or equal to –84 dBm.

   Found PLMNs that do not satisfy the high quality criterion, but for which the UE has been able to read the PLMN identities are reported to the NAS together with the CPICH RSCP value for UTRA FDD cells and P-CCPCH RSCP for UTRA TDD cells.

3. GSM case: A PLMN shall be understood to be received with high quality signal if the signal level is above -85 dBm.

References

1. TS 23.122, clause 4.4.3.1.2.
2. TS 25.304, clause 5.1.2.2.
3. TS 03.22, clause 4.4.3.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.5.3 Test purpose

1. To verify that:

   1.1 If neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order".

   1.2 If no PLMN is available in test purpose 1.1, the UE tries to obtain registration on "Other PLMN/access technology combinations in order of decreasing signal quality".

2. The "random order" in test purpose 1.1 is not verified.

6.2.1.5.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD).

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	High Quality signal	Test Channel	PLMN	Radio Access Technology
Cell 1	-80	-69	Yes	1	PLMN 7	UTRAN
Cell 2	-65	-65	Yes	1	PLMN 8	GSM
Cell 3	-98	-87	No	2	PLMN 9	UTRAN
Cell 4	-101	-90	No	2	PLMN 10	UTRAN
Cell 5	-88	-88	No	3	PLMN 11	GSM
Cell 6	-91	-91	No	3	PLMN 12	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM
EF_{FPLMN}	PLMN 7		
	PLMN 12		

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) PLMN11 shall be selected when the PLMN list is presented.

d) The SS waits for random access requests from the UE.

e) Cell 5 is switched off.

f) PLMN8 shall be selected when the PLMN list is presented.

g) The SS waits for random access requests from the UE.

h) Cell 2 is switched off.

i) PLMN10 shall be selected when the PLMN list is presented.

j) The SS waits for random access requests from the UE.

k) Cell 4 is switched off.

l) PLMN7 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

m) Cell 1 is switched off.

n) PLMN9 shall be selected when the PLMN list is presented.

o) The SS waits for random access requests from the UE.

p) Cell 3 is switched off.

q) PLMN12 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

r) Cell 6 is switched off.

6.2.1.5.5 Test Requirements

In all steps, the PLMN priority list shall be as follows: PLMN7, PLMN8 in random order followed by the other PLMNs. PLMN9 shall always come before PLMN10 and PLMN11 shall always come before PLMN12.

1) In step c), the list shall be presented and contain PLMN7, 8, 9, 10, 11, 12.

2) In step d), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN11.

3) In step f), the list shall be presented and contain PLMN7, 8, 9, 10, 12.

4) In step g), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN8.

5) In step i), the list shall be presented and contain PLMN7, 9, 10, 12.

6) In step j), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN10.

7) In step l), the list shall be presented and contain PLMN7, 9, 12. After the PLMN has been selected, the list shall appear again as the UE cannot perform registration.

9) In step n), the list shall be presented and contain PLMN9, 12.

10) In step o), the response from the UE shall be on Cell 3. The displayed PLMN shall be PLMN9.

11) In step q), the list shall be presented and shall only contain PLMN12. After the PLMN has been selected, the list shall appear again as the UE cannot perform registration.

13) After step r), the UE shall inform that no network is available

6.2.1.6 Selection of RAT for HPLMN; Automatic mode

6.2.1.6.1 Definition

Test to verify that the UE selects the HPLMN RAT according to the HPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall try to obtain registration on the same PLMN using other UE-supported RATs.

6.2.1.6.2 Conformance requirement

1. To allow provision for multiple HPLMN codes, the HPLMN access technologies are stored on the SIM together with PLMN codes. This version of the specification does not support multiple HLPMN codes and the "HPLMN Selector with Access Technology" data field is only used by the MS to get the HPLMN access technologies. The HPLMN code is the PLMN code included in the IMSI.

2. For HPLMN, the MS shall search for all access technologies it is capable of. The MS shall start its search using the access technologies stored in the "HPLMN Selector with Access Technology" data field on the SIM in priority order (i.e. the PLMN/access technology combinations are listed in priority order, if an entry includes more than one access technology then no priority is defined for the preferred access technology and the priority is an implementation issue).

3. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   3.1 HPLMN (if not previously selected);

   3.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   3.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   3.4 Other PLMN/access technology combinations with received high quality signal in random order;

   3.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

References

1. TS 23.122, clause 4.4.3.
2. TS 23.122, clause 4.4.3.1.1 (f).
3. TS 23.122, clause 4.4.3.1.1.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.6.3 Test purpose

1. To verify that:

1.1 the UE searches for a HPLMN RAT according to the HPLMN Selector with Access Technology data field on the USIM in priority order.

1.2 If no RAT on the priority list is available, the UE tries to obtain registration on the same PLMN using other UE-supported RATs.

6.2.1.6.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD). Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 2	UTRAN
Cell 2	-48	-48	1	PLMN 2	GSM
Cell 3	-75	-64	2	PLMN 3	UTRAN
Cell 4	-50	-50	2	PLMN 3	GSM

The UE is equipped with a USIM containing default values except for those listed below.
USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM

USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		

Test procedure

Method B is applied.

a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) The UE is switched off and a USIM with settings according to USIM A is again inserted. All cells except Cell 1 are active.

e) The SS waits for random access requests from the UE.

f) The UE is switched off and a USIM with settings according to USIM B is inserted. All cells except Cell 1 are active.

g) The UE is switched on.

h) The SS waits for random access requests from the UE.

6.2.1.6.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{HPLMNwAcT}$). The displayed PLMN shall be PLMN2 (UTRAN).

2) In step e), the response from the UE shall be on Cell 2 (2nd priority RAT for $EF_{HPLMNwAcT}$). The displayed PLMN shall be PLMN2 (GSM).

3) In step h), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN2 (GSM). (PLMN2 is not available on UTRAN so registration on the same PLMN is attempted using other UE-supported RATs).

6.2.1.7 Selection of RAT for UPLMN; Automatic mode

6.2.1.7.1 Definition

Test to verify that the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for PLMNs in the OPLMN list.

6.2.1.7.2 Conformance requirement

1. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   1.1 HPLMN (if not previously selected);

   1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

   If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

References

1. TS 23.122, clause 4.4.3.1.1.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.7.3 Test purpose

1. To verify that:

   1.1 the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM.

   1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN with another RAT but instead searches for PLMNs in the OPLMN list.

6.2.1.7.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD). Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH / RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 3	UTRAN
Cell 2	-48	-48	1	PLMN 3	GSM
Cell 3	-75	-64	2	PLMN 4	UTRAN
Cell 4	-50	-50	2	PLMN 4	GSM
Cell 5	-78	-67	3	PLMN 5	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) Cell 1 is switched off.

e) The SS waits for random access requests from the UE.

f) Cell 4 is switched off.

g) The SS waits for random access requests from the UE.

6.2.1.7.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{PLMNwAcT}$). The displayed PLMN shall be PLMN3 (UTRAN).

2) In step e), the response from the UE shall be on Cell 4 (2nd priority RAT for $EF_{PLMNwAcT}$). The displayed PLMN shall be PLMN4 (GSM).

3) In step g), the response from the UE shall be on Cell 5 (1st priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN5 (UTRAN).

6.2.1.8 Selection of RAT for OPLMN; Automatic mode

6.2.1.8.1 Definition

Test to verify that the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for other PLMN/access technology combinations with received high quality signal in random order.

6.2.1.8.2 Conformance requirement

1. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   1.1 HPLMN (if not previously selected);

   1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

   If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

References

1. TS 23.122, clause 4.4.3.1.1.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.8.3 Test purpose

1. To verify that:

   1.1 the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM.

   1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN(s) with other RAT(s) but instead searches for "other PLMN/access technology combinations with received high quality signal in random order".

6.2.1.8.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD). Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 5	UTRAN
Cell 2	-48	-48	1	PLMN 5	GSM
Cell 3	-75	-64	2	PLMN 6	UTRAN
Cell 4	-50	-50	2	PLMN 6	GSM
Cell 5	-78	-67	3	PLMN 7	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) Cell 1 is switched off.

e) The SS waits for random access requests from the UE.

f) Cell 4 is switched off.

g) The SS waits for random access requests from the UE.

6.2.1.8.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN5 (UTRAN).

2) In step e), the response from the UE shall be on Cell 4 (2nd priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN6 (GSM).

3) In step g), the response from the UE shall be on either Cell 2, 3 or 5 (other PLMN/access technology combination) with associated PLMN5 (GSM), PLMN6 (UTRAN) or PLMN7 (UTRAN) shown.

6.2.1.9 Selection of "Other PLMN / access technology combinations"; Automatic mode

6.2.1.9.1 Definition

Test to verify that if neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE first tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order" and secondly on "Other PLMN/access technology combinations in order of decreasing signal quality".

6.2.1.9.2 Conformance requirement

1. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

1.1 HPLMN (if not previously selected);

1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

1.4 Other PLMN/access technology combinations with received high quality signal in random order;

1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

In 1.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

2. UTRA case: The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the strongest cell according to the cell search procedures (for FDD, see TS 25.214, and TDD, see TS 25.224) and read its system information, in order to find out which PLMN the cell belongs to. If the UE can read the PLMN identity, the found PLMN shall be reported to the NAS as a high quality PLMN (but without the RSCP value), provided that the following high quality criterion is fulfilled:

   - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.

   - For a TDD cell, the measured P-CCPCH RSCP shall be greater than or equal to –84 dBm.

   Found PLMNs that do not satisfy the high quality criterion, but for which the UE has been able to read the PLMN identities are reported to the NAS together with the CPICH RSCP value for UTRA FDD cells and P-CCPCH RSCP for UTRA TDD cells.

3. GSM case: A PLMN shall be understood to be received with high quality signal if the signal level is above -85 dBm.

References

1. TS 23.122, clause 4.4.3.1.1.
2. TS 25.304, clause 5.1.2.2.
3. TS 03.22, clause 4.4.3.

NOTE: TS 31.102 defines the USIM fields.

6.2.1.9.3 Test purpose

1. To verify that:

   1.1 If neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order".

   1.2 If no PLMN is available in test purpose 1.1, the UE tries to obtain registration on "Other PLMN/access technology combinations in order of decreasing signal quality".

2. The "random order" in test purpose 1.1 is not verified.

6.2.1.9.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP (FDD).

Cell	CPICH_RSCP / RF signal level [dBm] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	"High Quality signal"	Test Channel	PLMN	Radio Access Technology
Cell 1	-80	-69	Yes	1	PLMN 7	UTRAN
Cell 2	-65	-65	Yes	1	PLMN 8	GSM
Cell 3	-98	-87	No	2	PLMN 9	UTRAN
Cell 4	-101	-90	No	2	PLMN 10	UTRAN
Cell 5	-88	-88	No	3	PLMN 11	GSM
Cell 6	-91	-91	No	3	PLMN 12	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE.

d) The cell on which a response was received, is switched off.

e) Step c-d) is repeated until the UE informs that no network is available.

6.2.1.9.5 Test Requirements

1) In step c), the displayed PLMN is noted.

2) When the test procedure has finished, the noted PLMNs shall have appeared in the following order: PLMN7, PLMN8 in random order followed by the other PLMNs. PLMN9 shall come before PLMN10 and PLMN11 shall come before PLMN12.

6.2.2 Cell selection and reselection

6.2.2.1 Cell reselection if cell becomes barred or S<0; UTRAN to GSM

6.2.2.1.1 Definition

Test to verify that if both a GSM and UTRAN network is available, the UE performs cell reselection from UTRAN to GSM if the UTRAN cell becomes barred or S falls below zero.

6.2.2.1.2 Conformance requirement

1. When camped on a cell, the UE shall regularly search for a better cell according to the cell reselection criteria. If a better cell is found, that cell is selected. The change of cell may imply a change of RAT.

2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.

   2.1 The cell is part of the selected PLMN or, of a PLMN considered as equivalent by the UE according to the information provided by the NAS.

   2.2 The cell is not barred.

   2.3 The cell is not part of the list of "forbidden LAs for roaming".

   2.4 The cell selection criteria are fulfilled.

3. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   3.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD and TS 25.123 for TDD.

   3.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.

4. Cell Reselection Criteria:

   4.1 The UE shall perform ranking of all cells that fulfil the S criterion.

   4.2 The cells shall be ranked according to the R criteria specified above, deriving Qmeas,n and Qmeas,s and calculating the R values using CPICH RSCP, P-CCPCH RSCP and the averaged received signal level as specified in TS 25.133 and TS 25.123 for FDD, TDD and GSM cells, respectively.The best ranked cell is the cell with the highest R value. If a TDD or GSM cell is ranked as the best cell, then the UE shall perform cell re-selection to that TDD or GSM cell.

   4.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   4.4 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME. However, TEMP_OFFSET and PENALTY_TIME are only applicable if the usage of HCS is indicated in system information.

References

1. TS 25.304, clause 5.2.1.

2. TS 25.304, clause 4.3.

3. TS 25.304, clause 5.2.5.1.

4. TS 25.304, clause 5.2.6.1.4.

6.2.2.1.3 Test purpose

1. To verify that the UE performs reselection from UTRAN to GSM on the following occasions:

   1.1 Serving cell becomes barred.

   1.2 S<0 for serving cell.

6.2.2.1.4 Method of test

Initial conditions

The USIM does not contain any preferred RAT.
Step a-c:

Parameter	Unit	Cell 1 (UTRAN)
Test Channel		1
CPICH_Ec/Io (FDD)	dB	-11
CPICH RSCP (FDD)	dBm	-74
P-CCPCH RSCP (TDD)	dBm	-63
Qqualmin (FDD)	dB	-20
Qrxlevmin	dBm	-100
Squal* (FDD)	dB	9
Srxlev*	dBm	26
CellBarred		0

Parameter	Unit	Cell 2 (GSM)	Cell 3 (GSM)
Test Channel		1	2
RF Signal Level	dBm	-80	-85
RXLEV_ACCESS_MIN	dBm	-100	-100
C1*	dBm	20	15
FDD_Qmin	dB	-20	-20
FDD_Qoffset	dBm	0	0

Step d-f:

Parameter	Unit	Cell 1 (UTRAN)
CellBarred		0 -> 1

Step g:

Parameter	Unit	Cell 1 (UTRAN)
Qqualmin	dB	-20 -> -5
Squal*	dB	9 -> -6
Qrxlevmin	dBm	[TBD]

Test procedure

Method B is applied.

a) The SS activates cells 1, 2, and 3. The SS monitors cells 1, 2 and 3 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE.

d) The SS sets Cell 1 to be barred.

e) The SS waits for random access request from the UE.

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

g) Step a-e) is repeated except that in step d), Qqualmin is increased to -5 dB, so S will become negative instead of being barred. Step g does not apply to TDD cells.

6.2.2.1.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 2.

3) In step g), the UE shall respond on Cell 2 after Qualmin is increased to –5dB. Step g does not apply to the testing of TDD cells.

6.2.2.2 Cell reselection if cell becomes barred or C1<0; GSM to UTRAN

6.2.2.2.1 Definition

Test to verify that if both a GSM and UTRAN network is available, the UE performs cell reselection from GSM to UTRAN if the GSM cell becomes barred or the path loss criterion C1 falls below zero for a period of 5 s.

6.2.2.2.2 Conformance requirement

1. At least every 5 s the MS shall calculate the value of C1 and C2 for the serving cell and re-calculate C1 and C2 values for non serving cells (if necessary). The MS shall then check whether:

   1.1 The path loss criterion (C1) for current serving cell falls below zero for a period of 5 s. This indicates that the path loss to the cell has become too high.

2. While camped on a cell of the registered PLMN ("camped normally"), the MS may need to select a different cell ("normal cell reselection" state). The following events trigger a cell reselection:

   2.1 The path loss criterion parameter C1 (see TS 03.22, clause 3.6) indicates that the path loss to the cell has become too high;

   2.2 The cell camped on (current serving cell) has become barred.

References

1. TS 05.08, clause 6.6.2.

2. TS 03.22, clause 4.5.

6.2.2.2.3 Test purpose

1. To verify that the UE performs reselection from GSM to UTRAN on the following occasions:

   1.1 Serving cell becomes barred.

   1.2 The path loss criterion C1 for serving cell falls below zero for a period of 5 s.

6.2.2.2.4 Method of test

Initial conditions

The USIM does not contain any preferred RAT.Step a-c:

Parameter	Unit	Cell 1 (GSM)
Test Channel		1
RF Signal Level	dBm	-50
RXLEV_ACCESS_ MIN	dBm	-70
MS_TXPWR_MAX_ CCH	dBm	Max. output power of UE
FDD_Qmin	dB	-20
FDD_Qoffset	dBm	0
CellBarred		0
C1*	dBm	20

Parameter	Unit	Cell 2 (UTRAN)	Cell 3 (UTRAN)
P-CCPCH_RSCP (TDD)	dBm	-65	-67
CPICH_Ec/Io (FDD)	dB	-13	-15
CPICH_RSCP (FDD)	dBm	-76	-78
Qqualmin (FDD)	dB	-20	-20
Qrxlevmin	dBm	-100	-100
Squal* (FDD)	dB	7	5
Srxlev*	dBm	24	22

Step d-e:

Parameter	Unit	Cell 1 (GSM)
CellBarred		0 -> 1

Step f-g:

Parameter	Unit	Cell 1 (GSM)
RF Signal Level	dBm	-50 -> -80 (4sec) -> -50
C1*	dBm	20 -> -10 (4sec) -> 20

Step h:

Parameter	Unit	Cell 1 (GSM)
RF Signal Level	dBm	-50 -> -80
C1*	dBm	20 -> -10

Test procedure

Method B is applied.

a) The SS activates cells 1, 2, and 3. The SS monitors cells 1, 2 and 3 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE.

d) The SS sets Cell 1 to be barred.

e) The SS waits for random access request from the UE.

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

g) Step a-e) is repeated except that in step d), ~~T~~the SS reduces signal level on Cell 1 to –80 dBm for 4 s and then raises the level back to –50 dBm (C1 becomes –10 dBm during this period).

h) The SS reduces signal level on Cell 1 to –80 dBm.

6.2.2.2.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 2.

3) In step g), there shall be no access on Cell 2 within 30 s, after having reduced the signal level on Cell 1.

4) In step h), the UE shall respond on Cell 2.

6.2.2.3 Cell reselection timings; GSM to UTRAN

6.2.2.3.1 Definition

Test to verify that the UE meets the cell reselection timing requirements when both a GSM and UTRAN network is available.

6.2.2.3.2 Conformance requirement

1. If the 3G Cell Reselection list (see TS 04.18) includes UTRAN frequencies, the MS shall, at least every 5 s update the value RLA_C for the serving cell and each of the at least 6 strongest non-serving GSM cells.

   1.1 The MS shall then reselect a suitable UTRAN cell if its measured RSCP value exceeds the value of RLA_C for the serving cell and all of the suitable non-serving GSM cells by the value XXX_Qoffset for a period of 5 s and, for FDD, the UTRAN cells measured Ec/No value is equal or greater than the value FDD_Qmin.

   - Ec/No and RSCP are the measured quantities.
   - FDD_Qmin and XXX_Qoffset are broadcast on BCCH of the serving cell. XXX indicates other radio access technology/mode.

   1.2 In case of a cell reselection occurring within the previous 15 s, XXX_Qoffset is increased by 5 dB.

   1.3 Cell reselection to UTRAN shall not occur within 5 s after the MS has reselected a GSM from an UTRAN cell if a suitable GSM cell can be found.

   1.4 If more than one UTRAN cell fulfils the above criteria, the UE shall select the cell with the greatest RSCP value.

2. The MS shall be able to identify and select a new best UTRAN cell on a frequency, which is part of the 3G Cell Reselection list, within 30 s after it has been activated under the condition that there is only one UTRAN frequency in the list and under good radio conditions.

   The allowed time is increased by 30 s for each additional UTRAN frequency in the 3G Cell Reselection list. However, multiple UTRAN cells on the same frequency in the neighbour cell list does not increase the allowed time.

NOTE: Definitions of measurements are in TS 25.215 and TS 25.101 for FDD mode, in TS 25.225 and TS 25.102 for TDD mode, clause 3.2 and TS 05.08, clause 6.1.

References

1. TS 05.08, clause 6.6.5.
2. TS 05.08, clause 6.6.4.

6.2.2.3.3 Test purpose

1. To verify that:

   1.1 The UE meets conformance requirement 1.1 and additionally, that no reselection is performed if the period is less than 5 s

   1.2 The UE meets conformance requirement 1.2.

   1.3 The UE meets conformance requirement 1.3.

6.2.2.3.4 Method of test

Initial conditions

The USIM does not contain any preferred RAT.
Step a-c:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
Test Channel		1	2
RF Signal Level	dBm	-70	-85
RXLEV_ACCESS_MIN	dBm	-100	-100
MS_TXPWR_MAX_CCH	dBm	Max. output power of UE	Max. output power of UE
FDD_Qmin	dBm	-20	-20
FDD_Qoffset	dBm	5	5

Parameter	Unit	Cell 3 (UTRAN)
Test Channel		1
CPICH_Ec/Io (FDD)	dB	-11
CPICH_RSCP (FDD)	dBm	-74
P-CCPCH_RSCP (TDD)	dBm	-63
Qqualmin (FDD)	dB	-20
Qrxlevmin	dBm	-100
Squal* (FDD)	dB	9
Srxlev*	dBm	26

Step d-g:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-70 -> -82 (4 s) -> -70	OFF

Step h-j:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-82 -> -70	OFF

Step k-m:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-82 -> -70 -> -82	OFF

Test procedure

NOTE: Step a-c): Test purpose 1.3. Step d-g): test purpose 1.1. Step h-k): test purpose 1.2.

Method A is applied.

a) The SS activates the channels. The UE is not paged on any of the cells.

b) The UE is switched on.

c) After 50 s, the SS starts paging continuously on cells 1 and 3 for 20 s. The SS monitors cells 1 and 3 for random access requests from the UE.

d) Cell 2 is switched off. The SS stops paging on the cells and waits for 20 s. (The UE should revert to Cell 1 due to cell reselection).

e) The SS starts paging continuously on Cell 3.

f) The SS decreases the transmit level of Cell 1 to –82 dBm for a period of 4 s (RSCP will then exceed RXLEV by more than XXX_Qoffset) and then changes the level back to –70 dBm.

g) The SS waits to see if there is any random access requests from the UE on Cell 3.

h) The SS stops paging on all cells and sets the transmit level of Cell 1 to –82 dBm.

i) The SS waits 20 s and then starts paging continously on Cell 1. (The UE should revert to Cell 3 due to cell reselection).

j) The SS increases the transmit level of Cell 1 to –70 dBm and waits for the UE to access on Cell 1. The SS records the time t from the increase in the level of Cell 1 to the first response from the UE.

k) The SS stops paging on all cells and sets the transmit level of Cell 1 back to –82 dBm.

l) The SS waits 20 s (The UE should revert to Cell 3 due to cell reselection).

m) The SS increases the transmit level of Cell 1 to –70 dBm. After t+2 s (i.e. 2 s after reselection to Cell 1), the SS starts paging continuously on Cell 3, changes the level of Cell 1 back to –82 dBm and waits to see if there is any random access request on Cell 3. (Within 15 sec after reselection to GSM, the level of Cell 1 is -82 + 10 dBm=-72 dBm. After the 15 s period, the level of Cell 1 is –82 + 5 dBm=-77 dBm. The level of Cell 3 is –74 dBm, thus leading to reselection to Cell 3 after 15 s).

6.2.2.3.5 Test Requirements

1) In step c), after the UE has reselected Cell 1 from Cell 3 as indicated by random access requests, any random access requests on Cell 3 shall not occur within 4,5 s of the last random access request on Cell 1.

2) In step g), there shall be no access on Cell 3 within 34 s of decreasing the level of Cell 1.

3) In step j), the UE shall respond on Cell 1.

4) In step m), there shall be no response on Cell 3 within 11 s after the level of Cell 1 is changed back to -82 dBm.

NOTE: The 11 s is derived from (t+15) s minimum cell reselection timer minus (t+2) s from the start of step m) up to the decrease of the level of Cell 1. A further 2 s are subtracted to cover for any uncertainty introduced by the random access process occurring after step g).

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⌘	**34.123-1**	**CR**	**119**	⌘	rev		⌘	Current version:	**4.0.0**	⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM [ ] ME/UE [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Addition of measurement test cases.
Source:	⌘	Motorola
Work item code:	⌘	TEI
Date:	⌘	23 November 2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	Existing measurement test cases do not cover “Traffic volume measurement” and “Quality measurement” features.
Summary of change:	⌘	1. New Traffic volume measurement and Quality measurement test cases 8.4.1.16 to 8.4.1.22 are added 2. The measurement test case 8.4.1.15 is enhanced
Consequences if not approved:	⌘	Measurement feature will not be completely tested.

Clauses affected:	⌘	8.4.1
Other specs affected:	⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications
Other comments:	⌘	Applicable to R99 and later releases

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.4.1.15 Measurement Control and Report: Configuration Incomplete

8.4.1.15.1 Definition

8.4.1.15.2 Conformance requirement

When the UE received a MEASUREMENT CONTROL message which results in an "configuration incomplete" condition to be detected, the UE shall retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received. It shall also send MEASUREMENT CONTROL FAILURE, with the IE "RRC transaction identifier" set to the value of the same IE in the received MEASUREMENT CONTROL message, and also the "failure cause" IE set to "incomplete configuration".

Reference

3GPP TS 25.331 clause 8.4.1.4a, 8.6.7.10, 8.6.7.13, 8.6.7.14, 8.6.7.16, 8.6.7.17, 8.6.7.18

8.4.1.14.3 Test Purpose

To confirm that the UE sends a MEASUREMENT CONTROL FAILURE message, after receiving a MEASUREMENT CONTROL message with IE "Measurement command" set to "Setup" and the following contents:

- "CHOICE measurement type" IE is set to "Intra-frequency measurement" and "Intra-frequency measurement quantity" is omitted or
- "CHOICE measurement type" IE is set to "Inter-frequency measurement" and "Inter-frequency reporting quantity" is omitted or
- "Reporting mode" IE is omitted or
- "CHOICE measurement type" IE is set to "Quality measurement" and IE "Quality reporting quantity" is omitted or
- "CHOICE measurement type" IE is set to "UE internal measurement" and IE "UE internal measurement quantity" is omitted or
- "CHOICE measurement type" IE is set to "UE internal measurement" and IE "UE internal reporting quantity" is omitted or
- "CHOICE measurement type" IE is set to "Traffic volume measurement" and IE "Traffic volume measurement quantity" is omitted or
- "CHOICE measurement type" IE is set to "Traffic volume measurement" and IE "Traffic volume reporting quantity" is omitted

To confirm that the UE set the "failure cause" IE to value "incomplete configuration" in the uplink MEASUREMENT CONTROL FAILURE message.

8.4.1.15.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH_DCH (State 6-5) or PS-DCCH_DCH (State 6-7) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Test Procedure

The UE is initially brought to CELL_DCH. SS transmits a MEASUREMENT CONTROL message to the UE, commanding it to start an intra-frequency measurement and reporting task. However, IE "Intra-frequency measurement quantity" is absent in the message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends the MEASUREMENT CONTROL message once more. In this message, SS commands the establishment of an inter-frequency measurement and reporting task, but IE "Inter-frequency reporting quantity" is omitted in this message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

~~In the final sequence~~ Next, SS sends a third MEASUREMENT CONTROL message. In this message, SS commands the establishment of an intra-frequency measurement and reporting task, but IE "Measurement reporting mode" is omitted in this message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a fourth MEASUREMENT CONTROL message. In this message, SS commands the establishment of a quality measurement and reporting task, but IE "Quality reporting quantity" is omitted in this message. The UE shall not establish the quality measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a fifth MEASUREMENT CONTROL message. In this message, SS commands the establishment of UE internal measurement and reporting task, but IE "UE internal measurement quantity" is omitted in this message. The UE shall not establish the UE internal measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a sixth MEASUREMENT CONTROL message. In this message, SS commands the establishment of UE internal measurement and reporting task, but IE "UE internal reporting quantity" is omitted in this message. The UE shall not establish the UE internal measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a seventh MEASUREMENT CONTROL message. In this message, SS commands the establishment of a traffic volume measurement and reporting task, but IE "Traffic volume measurement quantity" is omitted in this message. The UE shall not establish the traffic volume measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

In the final sequence, SS sends an eight MEASUREMENT CONTROL message. In this message, SS commands the establishment of a traffic volume measurement and reporting task, but IE "Traffic volume reporting quantity" is omitted in this message. The UE shall not establish the traffic volume measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is CELL_DCH state in cell 1.
2	←		MEASUREMENT CONTROL	SS commands the start of an intra-frequency measurement and reporting task. IE "Intra-frequency measurement quantity" is absent.
3	→		MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
4	←		MEASUREMENT CONTROL	SS commands the start of an inter-frequency measurement and reporting task. IE "Inter-frequency reporting quantity" is absent.
5	→		MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"

6	←	MEASUREMENT CONTROL	SS commands the start of an inter-frequency measurement and reporting task. IE "Measurement reporting mode" is absent.
7	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
8	←	MEASUREMENT CONTROL	SS commands the start of a Quality measurement and reporting task. IE "Quality reporting quantity" is absent.
9	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
10	←	MEASUREMENT CONTROL	SS commands the start of an UE internal measurement and reporting task. IE "UE internal measurement quantity" is absent.
11	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
12	←	MEASUREMENT CONTROL	SS commands the start of an UE internal measurement and reporting task. IE "UE internal reporting quantity" is absent.
13	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
14	←	MEASUREMENT CONTROL	SS commands the start of a Traffic volume measurement and reporting task. IE "Traffic volume measurement quantity" is absent.
15	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
16	←	MEASUREMENT CONTROL	SS commands the start of a Traffic volume measurement and reporting task. IE "Traffic volume reporting quantity" is absent.
17	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"

Specific Message Content

MEASUREMENT CONTROL (Step 2)

Information Element	Value/Remark
Measurement Identity	1
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting/Event Trigger Reporting Mode	Periodical reporting
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cell	Not Present
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 1
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN onserved time difference reporting indicator	No report
- Cell synchronization information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN onserved time difference reporting indicator	No report
- Cell synchronization information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active set
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
DPCH compressed mode status info	Not Present

MEASUREMENT CONTROL FAILURE (Step 3)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 2
Failure cause	Check to see if set to “incomplete configuration”

MEASUREMENT CONTROL (Step 4) (Note 1)

Information Element	Value/Remark

Measurement Identity	2
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting/Event Trigger Reporting Mode	Periodical reporting
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cell	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- CHOICE Mode	FDD
- UARFCN uplink (Nu)	Set to the same UARFCN as cell 4 in clause 6.1 of TS 34.108
- UARFCN downlink (Nu)	Set to the same UARFCN as cell 4 in clause 6.1 of TS 34.108
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and re-selection info	Not Present
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE rerporting criteria	Inter-frequency reporting criteria
- Filter coefficients	0
- CHOICE mode	FDD
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	Not Present
- Reporting cell status	
- CHOICE reported cell	Report cells within monitored set on non-used frequency
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
- Inter-frequency set update	Not Present
DPCH compressed mode status info	Not Present

MEASUREMENT CONTROL FAILURE (Step 5)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 4
Failure cause	Check to see if set to “incomplete configuration”

MEASUREMENT CONTROL (Step 6)

Information Element	Value/Remark

Measurement Identity	3
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cell	Not Present
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 1
- Intra-frequency measurement quantity	
- Filter coefficient	0
- CHOICE mode	FDD
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN onserved time difference reporting indicator	No report
- Cell synchronization information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN onserved time difference reporting indicator	No report
- Cell synchronization information reporting indicator	No report
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active set
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
DPCH compressed mode status info	Not Present

MEASUREMENT CONTROL FAILURE (Step 7)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 6
Failure cause	Check to see if set to “incomplete configuration”

MEASUREMENT CONTROL (Step 8)

Information Element	Value/Remark
Measurement identity	16
Measurement command	Setup
- CHOICE measurement type	Quality measurement
- Quality reporting quantity	Not present
- Reporting criteria	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	64 sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT CONTROL FAILURE (Step 9)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 8
Failure cause	Check to see if set to "incomplete configuration"

MEASUREMENT CONTROL (Step 10)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
CHOICE measurement type	UE internal measurement
- UE internal measurement quantity	Not present
- UE internal reporting quantity	
- UE Transmitted Power	TRUE
- CHOICE mode	FDD
- UE Rx-Tx time difference	FALSE
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	1000 msec
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT CONTROL FAILURE (Step 11)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 10
Failure cause	Check to see if set to "incomplete configuration"

MEASUREMENT CONTROL (Step 12)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
CHOICE measurement type	UE internal measurement
- UE internal measurement quantity	
- CHOICE mode	FDD
- Measurement quantity	UE Transmitted Power
- Filter Coefficient	0
- UE internal reporting quantity	Not present
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	1000 msec
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT CONTROL FAILURE (Step 13)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 12
Failure cause	Check to see if set to “incomplete configuration”

MEASUREMENT CONTROL (Step 14)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	Not present
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT CONTROL FAILURE (Step 15)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 14
Failure cause	Check to see if set to “incomplete configuration”

MEASUREMENT CONTROL (Step 16)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	Not present
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT CONTROL FAILURE (Step 17)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 16
Failure cause	Check to see if set to “incomplete configuration”

Note1: For the MEASUREMENT CONTROL message in step 4, cell 4 is signalled to be added as a new cell into the UE’s inter-frequency cell list. However, SS does not need to transmit cell 4 in the downlink, as the UE is not expected to perform measurement and reporting for this cell.

8.4.1.15.5 Test Requirement

After step 2, ~~step~~ 4, 6, 8, 10, 12, 14 and step 16, the UE shall transmit MEASUREMENT CONTROL FAILURE message, stating the IE ”failure cause” as “incomplete configuration”. The UE shall not transmit any MEASUREMENT REPORT messages during the execution of this test case.

8.4.1.16 Measurement Control and Report: Traffic volume measurement for transition from idle mode to CELL_FACH state

8.4.1.16.1 Definition

8.4.1.16.2 Conformance requirement

Upon transition from idle mode to CELL_FACH state, the UE shall store the measurement control information from the IE "Traffic volume measurements system information" received in System Information Block type 11 or System Information Block type 12. UE shall begin traffic volume measurement reporting according to the assigned information.

Reference

3GPP TS 25.331 clause 8.4.1.9.4

8.4.1.16.3 Test Purpose

To confirm that after a state transition from idle mode to CELL_FACH state, the UE shall begin a traffic volume type measurement, as specified in System Information Block type 11 or 12 messages on BCCH. To confirm that in CELL_FACH state, the UE shall send a MEASUREMENT REPORT message when reporting criteria is satisfied. During CELL_FACH state, if the UE receives a MEASUREMENT CONTROL message, it shall perform the measurement and reporting tasks based on the MEASUREMENT CONTROL message received.

8.4.1.16.4 Method of test

Initial Condition

System Simulator: 1cell

UE: ”Registered idle mode on CS” (state 2) or ”Registered idle mode on PS” (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be “Registered idle mode on CS/PS” (state 7).

Test Procedure

The UE is initially in idle mode. The System Information Block type 11 message is modified with respect to the default settings to request UE to perform traffic volume measurements. Key measurement parameters are as follows: measurement quantity = "RLC Buffer Payload", report criteria = "periodic reporting criteria", reporting interval = "6 seconds", reporting amount = 'infinity'. The System Information type 12 message is not broadcasted.

SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. The UE shall transmit a RRC CONNECTION REQUEST message on the uplink CCCH, SS replies with RRC CONNECTION SETUP message and allocates PRACH and S-CCPCH physical channels for uplink and downlink usage. UE shall then enter CELL_FACH state.

UE shall begin traffic volume measurements, and shall send MEASUREMENT REPORT message after completing first measurement. UE shall send second MEASUREMENT REPORT message 6 seconds after first MEASUREMENT REPORT message.

SS sends MEASUREMENT CONTROL message to the UE. This message overwrites measurement information saved from System information type 11. Key measurement parameters are as follow: measurement type = "traffic volume measurement", measurement quantity = "RLC Buffer Payload", report criteria = "Event triggered, event 4B: Transport Channel Traffic Volume becomes smaller than an absolute threshold ", Time to trigger = "5 seconds", pending time after trigger = "16 seconds", " reporting threshold = '4K'. Since there is no uplink traffic, UE shall send MEASUREMENT REPORT message after 5 seconds (time to trigger interval).

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 11	The UE is idle mode and camped onto cell 1. System Information Block type 11 to be transmitted is different from the default settings (see specific message contents)
2				SS prompts the test operator to make an outgoing call.
3	→		RRC CONNECTION REQUEST	
4	←		RRC CONNECTION SETUP	SS allocates common physical channels to UE.
5	→		RRC CONNECTION COMPLETE	UE shall enter CELL_FACH state, and transmit this message to acknowledge the RRC CONNECTION SETUP message.
6	→		MEASUREMENT REPORT	
7	→		MEASUREMENT REPORT	Time difference between earlier and this MEASUREMENT REPORT message should be 6 Seconds.
8	←		MEASUREMENT CONTROL	Traffic volume measurement reporting is requested if measurement is below threshold.

9			SS monitors the uplink DCCH to confirm that no MEASUREMENT REPORT messages are received in 5 seconds.
10	→	MEASUREMENT REPORT	Measurement report because event 4b is triggered

Specific Message Content

System Information Block type 11 (Step 1)

Information Element	Value/Remarks
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_quality	CPICH RSCP
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	4
- Traffic volume measurement object list	Rach
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	All States except CELL_DCH
- Measurement reporting mode	
- Measurement report transfer mode	Acknowledged Mode
- Periodical or event trigger	Periodical
- Report criteria system Information	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	6 seconds
- UE internal measurement system information	Not Present

RRC CONNECTION REQUEST (Step 3)

Information Element	Value/Remarks
Initial UE Identity	Check to see if it is the same as the IMSI in USIM card, TMSI or P-TMSI previously allocated.
Establishment cause	Check to see if set to originating call of the compatible traffic classes supported by the UE
Measured results on RACH	Check to see if IE is absent

RRC CONNECTION SETUP (Step 4)

Use the same message sub-type found in Annex A, which is titled “Transition to CELL_FACH”.

MEASUREMENT REPORT (Step 6,7)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 4
Measured Results	
- CHOICE measurement	Check to see if set to “traffic volume measured results list”
- Traffic volume measurement results	
- RB identity	0
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

MEASUREMENT CONTROL (Step 8)

Information Element	Value/Remark
Measurement Identity	4
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Traffic Volume Reporting Criteria
- UL transport channel id	Rach Null
- Event specific parameters	
- Event id	4B
- Reporting threshold	4K
- Time to trigger	5000 ms
- Pending time after trigger	16000 ms
- Tx interruption after trigger	Not Present
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Event trigger
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 10)

Information Element	Value/Remarks
Measurement identity	4
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	0
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Traffic Volume Event Results
- UL transport channel causing event	Rach Null
- Traffic volume event identity	4B

8.4.1.16.5 Test Requirement

After step 5 the UE shall send MEASUREMENT REPORT messages on the uplink DCCH containg RLC buffer payload information for all SRBs. After 6 seconds UE shall send second MEASUREMENT REPORT messages containg RLC buffer payload information for all SRBs.

After step 8 the UE shall overwrite measurement information received from system information type 11 with measurement information in MEASUREMENT CONTROL message. The UE shall not send MEASUREMENT REPORT message within time to trigger interval. After step 9 the UE shall transmit MEASUREMENT REPORT messages with event identity 4B.

8.4.1.17 Measurement Control and Report: Traffic volume measurement for transition from idle mode to CELL_DCH state

8.4.1.17.1 Definition

8.4.1.17.2 Conformance requirement

Upon transition from idle mode to CELL_DCH state, the UE shall begin a traffic volume type measurement, assigned in System Information Block type 11 or System Information Block type 12.

Reference

3GPP TS 25.331 clause 8.4.1.8.4

8.4.1.17.3 Test Purpose

To confirm that after a state transition from idle mode to CELL_DCH state, the UE begin a traffic volume type measurement, as specified in System Information Block type 11 or 12 messages on BCCH. When entering CELL_DCH state, the UE shall send a MEASUREMENT REPORT message when reporting criteria is satisfied. During CELL_DCH state, if the UE receives a MEASUREMENT CONTROL message, it shall perform the measurement and reporting tasks based on the MEASUREMENT CONTROL message received.

8.4.1.17.4 Method of test

Initial Condition

System Simulator: 1cell

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

Test Procedure

The UE is initially in idle mode. The System Information Block type 11 message is modified with respect to the default settings to request UE to perform traffic volume measurements. Key measurement parameters are as follows: measurement quantity = "Average RLC Buffer Payload", report criteria = "Event triggered, event 4B", reporting threshold = "8K", report transfer mode = "Unacknowledged mode". The System Information type 12 message is not broadcasted.

SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. Dedicated resources are allocated to the UE during RRC connection establishment procedure.

UE shall begin traffic volume measurements after entering in CELL_DCH state. The UE shall send MEASUREMENT REPORT message because uplink traffic is below threshold.

SS sends MEASUREMENT CONTROL message to the UE. This message reconfigures measurement information saved from System information type 11. Key measurement parameters are as follow: measurement type = "traffic volume measurement", measurement quantity = "RLC Buffer Payload", report criteria = "Periodic reporting criteria", reporting interval = "8 seconds", reporting amount = "8". The UE shall periodically send MEASUREMENT REPORT message to report RLC Buffer Payload for each RB.

SS sends MEASUREMENT CONTROL message to release traffic volume measurement. UE shall not send measurement report after receiving this message.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is idle mode and camped onto cell 1. System Information Block type 11 to be transmitted is different from the default settings (see specific message contents)
2				SS prompts the test operator to make an outgoing call.
3	→		RRC CONNECTION REQUEST	
4		←	RRC CONNECTION SETUP	SS allocates dedicated physical channels to UE.
5	→		RRC CONNECTION COMPLETE	UE shall enter CELL_DCH state.

6	→	MEASUREMENT REPORT	Event 4B is triggered. This message should come on RB1.
7	←	MEASUREMENT CONTROL	Periodic Traffic volume measurement reporting is requested.
8	→	MEASUREMENT REPORT	This message should come on RB2.
9	→	MEASUREMENT REPORT	Time difference between earlier and this MEASUREMENT REPORT message should be 8 Seconds.
10	←	MEASUREMENT CONTROL	Release traffic volume measurement.
11			Wait for 8 Seconds to confirm that UE does not send measurement report message.

Specific Message Content

System Information Block type 11 (Step 1)

Information Element	Value/Remarks
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_quality	CPICH RSCP
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	2
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	Average RLC Buffer Payload
- Time Interval to take an average	200 msec
- Traffic volume reporting quantity	
- RB buffer payload	False
- RB buffer payload average	True
- RB buffer payload variance	False
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	CELL_DCH
- Measurement reporting mode	
- Measurement report transfer mode	Unacknowledged Mode
- Periodical or event trigger	Event Trigger
- Report criteria system Information	Traffic Volume Reporting Criteria
- UL transport channel id	Not Present
- Event specific parameters	
- Event id	4B
- Reporting threshold	8K
- Time to trigger	Not Present
- Pending time after trigger	Not Present
- Tx interruption after trigger	Not Present
- UE internal measurement system information	Not Present

RRC CONNECTION REQUEST (Step 3)

Information Element	Value/Remarks
Initial UE Identity	Check to see if it is the same as the IMSI in USIM card, TMSI or P-TMSI previously allocated.
Establishment cause	Check to see if set to originating call of the compatible traffic classes supported by the UE
Measured results on RACH	Check to see if IE is absent

RRC CONNECTION SETUP (Step 4)

Use the same message sub-type found in Annex A, which is titled “Transition to CELL_DCH”.

MEASUREMENT REPORT (Step 6)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 2
Measured Results	
- CHOICE measurement	Check to see if set to “traffic volume measured results list”
- Traffic volume measurement results	
- RB identity	0
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	1
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	
- UL transport channel causing event	DCH 5
- Traffic volume event identity	4B

MEASUREMENT CONTROL (Step 7)

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Reconfigure
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	DCH 5
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 8,9)

Information Element	Value/Remarks
Measurement identity	2
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	0
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

MEASUREMENT CONTROL (Step 10)

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Release
Measurement reporting mode	Not Present
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

8.4.1.17.5 Test Requirement

After step 5, due to triggering of event 4B, the UE shall send MEASUREMENT REPORT message using unacknowledged mode of RLC. After step 7, UE shall send MEASUREMENT REPORT message using Acknowledged mode of RLC. After 8 seconds UE shall send second MEASUREMENT REPORT message. After step 10, the UE shall not send MEASUREMENT REPORT message.

8.4.1.18 Measurement Control and Report: Traffic volume measurement for transition from CELL_FACH state to CELL_DCH state

8.4.1.18.1 Definition

8.4.1.18.2 Conformance requirement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall:

- retrieve each set of measurement control information of measurement type "traffic volume" stored;

  - if the optional IE "measurement validity" for this measurement has not been included:

    - delete the measurement;

  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states except CELL_DCH":

    - stop measurement reporting; and

    - save the measurement to be used after the next transition to CELL_FACH state;

  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":

    - continue measurement reporting;

  - if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "CELL_DCH":

    - resume this measurement and associated reporting;

- if no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_DCH state:

  - continue an ongoing traffic volume type measurement, assigned in System Information Block type 11 or System Information Block type 12.

Reference

3GPP TS 25.331 clause 8.4.1.7.4

8.4.1.18.3 Test Purpose

To confirm that the UE performs traffic volume measurements and the associated reporting when it enters CELL_DCH state from CELL_FACH state, and that such measurement contexts (and optionally, the reporting context) valid for CELL_DCH state have been previously stored.

To confirm that the UE shall continue to perform traffic volume measurement listed in the System Information Block type 11 or 12 messages, if no previously assigned measurements are present. The UE shall transmit MEASUREMENT REPORT messages if reporting conditions stated in System Information Block type 11 or 12 messages have been satisfied.

8.4.1.18.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

Initially the UE is in CELL_FACH state. MEASUREMENT CONTROL message is sent to the UE to establish traffic volume measurement context with optional IE "measurement validity" is not present. The UE shall perform measurement and reporting as assigned in MEASUREMENT CONTROL message. RADIO BEARER RECONFIGURATION procedure is used to take the UE from CELL_FACH state to CELL_DCH state. While entering CELL_DCH state from CELL_FACH state, the UE shall delete traffic volume measurement contexts if optional IE “measurement validity” is not present. So, in CELL_DCH state UE shall not perform traffic volume measurement and reporting. UE is taken to the CELL_FACH state from CELL_DCH state using RADIO BEARER RECONFIGURATION procedure. The UE shall not send MEASUREMENT REPORT message as measurement context is already deleted.

Similarly behavior of the UE when moved from CELL_FACH state to CELL_DCH state and assigned traffic volume measurement context is present with IE “measurement validity” is set to “All But CELL_DCH state” or “CELL_DCH state” or “All states” is tested.

When the UE is in CELL_FACH state, System Information is modified to assign traffic volume measurement and reporting to the UE. No previously assigned traffic volume measurement contexts are present in the UE. The UE is taken to CELL_DCH state from CELL_FACH state using RADIO BEARER RECONFIGURATION procedure. In CELL_DCH state the UE shall continue traffic volume measurement and reporting as assigned in System Information. Traffic volume measurement and reporting is released by sending MEASUREMENT CONTROL message.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		MEASUREMENT CONTROL	Optional IE "measurement validity" is not included.
2	→		MEASUREMENT REPORT	
3	←		RADIO BEARER RECONFIGURATION	
4	→		RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall delete measurement context setup by MEASUREMENT CONTROL message (Step 1).
5				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
6	←		RADIO BEARER RECONFIGURATION	
7	→		RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_FACH state.
8				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
9	←		MEASUREMENT CONTROL	IE "measurement validity" is set to “All But CELL_DCH”.
10	→		MEASUREMENT REPORT	.
11	←		RADIO BEARER RECONFIGURATION	
12	→		RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall stop traffic volume measurement setup by MEASUREMENT CONTROL message (Step 9).
13				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
14	←		MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 9).

15	←	RADIO BEARER RECONFIGURATION	
16	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_FACH state.
17	←	MEASUREMENT CONTROL	IE "measurement validity" is set to “CELL_DCH”.
18			SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
19	←	RADIO BEARER RECONFIGURATION	
20	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall start traffic volume measurement setup by MEASUREMENT CONTROL message (Step 17).
21	→	MEASUREMENT REPORT	
22	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 17)
23	←	RADIO BEARER RECONFIGURATION	
24	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_FACH state.
25	←	MEASUREMENT CONTROL	IE "measurement validity" is set to “All states”.
26	→	MEASUREMENT REPORT	
27	←	RADIO BEARER RECONFIGURATION	
28	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall continue traffic volume measurement setup by MEASUREMENT CONTROL message (Step 25).
29	→	MEASUREMENT REPORT	
30	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 25)
31	←	RADIO BEARER RECONFIGURATION	

32	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_FACH state.
33	←	SIB11 modified	Traffic volume measurements and reporting is assigned to Ues
34	→	MEASUREMENT REPORT	
35	←	RADIO BEARER RECONFIGURATION	
36	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall continue traffic volume measurement assigned in System Information (Step 33).
37	→	MEASUREMENT REPORT	
38	←	MEASUREMENT CONTROL	UE shall release measurement context assigned in System Information (Step 33).

Specific Message Content

MEASUREMENT CONTROL (Step 1)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 2)

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	0
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer variance	Check to see if this IE is absent
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	20
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

RADIO BEARER RECONFIGURATION (Step 3, 11, 19, 27, and 35)

Use the same message type found in Annex A with condition set to A4.

RADIO BEARER RECONFIGURATION (Step 6, 15, 23, and 31)

Use the same message type found in Annex A with condition set to A5.

MEASUREMENT CONTROL (Step 9)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	All But CELL_DCH

MEASUREMENT REPORT (Step 10)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	2

MEASUREMENT CONTROL (Step 14)

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Release
Measurement reporting mode	Not Present
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT CONTROL (Step 17)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	3
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	CELL_DCH

MEASUREMENT REPORT (Step 21)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	3

MEASUREMENT CONTROL (Step 22)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	3

MEASUREMENT CONTROL (Step 25)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	4
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	All States

MEASUREMENT REPORT (Step 26, and 29)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	4

MEASUREMENT CONTROL (Step 30)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	4

System Information Block type 11 (Step 33)

Information Element	Value/Remarks
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_quality	CPICH RSCP
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	5
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	Not Present
- Measurement reporting mode	
- Measurement report transfer mode	Acknowledged Mode
- Periodical or event trigger	Periodical
- Report criteria system Information	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	8 seconds
- UE internal measurement system information	Not Present

MEASUREMENT REPORT (Step 34, and 37)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	5

MEASUREMENT CONTROL (Step 38)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	5

8.4.1.18.5 Test Requirement

The UE shall send MEASUREMENT REPORT message in steps 21, 29 and 37. The UE shall not send MEASUREMENT REPORT message in steps 5, 8, and 13.

8.4.1.19 Measurement Control and Report: Traffic volume measurement for transition from CELL_DCH to CELL_FACH state

8.4.1.19.1 Definition

8.4.1.19.2 Conformance requirement

Upon transition from CELL_DCH to CELL_FACH state, the UE shall:

- retrieve each set of measurement control information of measurement type "traffic volume" stored in the UE; and
  - if the optional IE "measurement validity" for this measurement has not been included:
    - delete the associated measurement;
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "CELL_DCH":
    - stop measurement reporting;
    - save the associated measurement to be used after the next transition to CELL_DCH state;
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
    - continue measurement reporting;
  - if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "all states except CELL_DCH":
    - resume this measurement and associated reporting;
- if no traffic volume type measurements applicable to CELL_FACH states are stored in the UE:
    - store the measurement control information from the IE "Traffic volume measurement system information" received in System Information Block type 12 or System Information Block type 11;
    - begin traffic volume measurement reporting according to the assigned information.

8.4.1.19.3 Test Purpose

The UE shall performs traffic volume measurements and the associated reporting when it enters CELL_FACH state from CELL_DCH state, and that such measurement contexts (and optionally, the reporting context) valid for CELL_FACH state have been previously stored.

The UE shall perform traffic volume measurement listed in the System Information Block type 11 or 12 messages, if no previously assigned measurements are present. The UE shall transmit MEASUREMENT REPORT messages if reporting conditions has been satisfied.

Reference

3GPP TS 25.331 clause 8.4.1.6.6

8.4.1.19.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

Initially the UE is in CELL_DCH state. MEASUREMENT CONTROL message is sent to the UE to establish traffic volume measurement context with optional IE "measurement validity" is not present. The UE shall perform measurement and reporting as assigned in MEASUREMENT CONTROL message. RADIO BEARER RECONFIGURATION procedure is used to take the UE from CELL_DCH state to CELL_FACH state. While entering CELL_FACH state from CELL_DCH state, the UE shall delete traffic volume measurement contexts if optional IE "measurement validity" is not present. So, in CELL_FACH state UE shall not perform traffic volume measurement and reporting. UE is taken to the CELL_DCH state from CELL_FACH state using RADIO BEARER RECONFIGURATION procedure. The UE shall not send MEASUREMENT REPORT message as measurement context is already deleted.

Similarly behavior of the UE when moved from CELL_DCH state to CELL_FACH state and assigned traffic volume measurement context is present with IE "measurement validity" is set to "All But CELL_DCH state" or "CELL_DCH state" or "All states" is tested.

When the UE is in CELL_DCH state, System Information is modified to assign traffic volume measurement and reporting to the UE. No previously assigned traffic volume measurement contexts are present in the UE. The UE is taken to CELL_FACH state from CELL_DCH state using RADIO BEARER RECONFIGURATION procedure. In CELL_FACH state the UE shall perform traffic volume measurement and reporting as assigned in System Information. Traffic volume measurement and reporting is released by sending MEASUREMENT CONTROL message.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		MEASUREMENT CONTROL	Optional IE "measurement validity" is not included.
2	→		MEASUREMENT REPORT	
3	←		RADIO BEARER RECONFIGURATION	
4	→		RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall delete measurement context setup by MEASUREMENT CONTROL message (Step 1).
5				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
6	←		RADIO BEARER RECONFIGURATION	

7	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_DCH state.
8			SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
9	←	MEASUREMENT CONTROL	IE "measurement validity" is set to “All But CELL_DCH”.
10			SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
11	←	RADIO BEARER RECONFIGURATION	
12	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall start traffic volume measurement setup by MEASUREMENT CONTROL message (Step 9).
13	→	MEASUREMENT REPORT	
14	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 9).
15	←	RADIO BEARER RECONFIGURATION	
16	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_DCH state.
17	←	MEASUREMENT CONTROL	IE "measurement validity" is set to “CELL_DCH”.
18	→	MEASUREMENT REPORT	
19	←	RADIO BEARER RECONFIGURATION	
20	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall stop traffic volume measurement setup by MEASUREMENT CONTROL message (Step 17).
21			SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
22	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 17)
23	←	RADIO BEARER RECONFIGURATION	

24	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_DCH state.
25	←	MEASUREMENT CONTROL	IE "measurement validity" is set to “All states”.
26	→	MEASUREMENT REPORT	
27	←	RADIO BEARER RECONFIGURATION	
28	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall continue traffic volume measurement setup by MEASUREMENT CONTROL message (Step 25).
29	→	MEASUREMENT REPORT	
30	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 25)
31	←	RADIO BEARER RECONFIGURATION	
32	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_DCH state.
33	←	SIB12 modified	Traffic volume measurements and reporting is assigned to UEs
34	←	RADIO BEARER RECONFIGURATION	
35	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall start traffic volume measurement as assigned in System Information (Step 33).
36	→	MEASUREMENT REPORT	
37	←	MEASUREMENT CONTROL	UE shall release measurement context assigned in System Information (Step 33).

Specific Message Content

MEASUREMENT CONTROL (Step 1)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 2)

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	0
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer variance	Check to see if this IE is absent
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	20
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

RADIO BEARER RECONFIGURATION (Step 3, 11, 19, 27, and 34)

Use the same message type found in Annex A with condition set to A5.

RADIO BEARER RECONFIGURATION (Step 6, 15, 23, and 31)

Use the same message type found in Annex A with condition set to A4.

MEASUREMENT CONTROL (Step 9)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	All But CELL_DCH

MEASUREMENT REPORT (Step 13)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	2

MEASUREMENT CONTROL (Step 14)

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Release
Measurement reporting mode	Not Present
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT CONTROL (Step 17)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	3
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	CELL_DCH

MEASUREMENT REPORT (Step 18)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	3

MEASUREMENT CONTROL (Step 22)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	3

MEASUREMENT CONTROL (Step 25)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity Measurement Command - CHOICE measurement type - Measurement validity	4 Setup Traffic Volume Measurement All States

MEASUREMENT REPORT (Step 26, and 29)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	4

MEASUREMENT CONTROL (Step 30)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	4

System Information Block type 12 (Step 33)

Information Element	Value/Remarks
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality	CPICH RSCP
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	5
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	Not Present
- Measurement reporting mode	
- Measurement report transfer mode	Acknowledged Mode
- Periodical or event trigger	Periodical
- Report criteria system Information	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	8 seconds
- UE internal measurement system information	Not Present

MEASUREMENT REPORT (Step 36)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	5

MEASUREMENT CONTROL (Step 37)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	5

8.4.1.19.5 Test Requirement

The UE shall send MEASUREMENT REPORT message in steps 13, 29 and 36. The UE shall not send MEASUREMENT REPORT message in steps 5, 8, and 21.

8.4.1.20 Measurement Control and Report: Traffic volume measurement in CELL_PCH state

8.4.1.20.1 Definition

8.4.1.20.2 Conformance requirement

In CELL_PCH state, when the reporting criteria is fulfilled for any traffic volume measurement which is being performed in the UE, the UE shall first perform the cell update procedure with the cause "uplink data transmission", in order to transit to CELL_FACH state and then transmit a MEASUREMENT REPORT message on the uplink DCCH

8.4.1.20.3 Test Purpose

To confirm that in CELL_PCH state, UE performs assigned traffic volume measurement. When reporting criteria for ongoing traffic volume measurement is fulfilled, the UE shall first perform cell update procedure and then transmit MEASUREMENT REPORT message.

Reference

3GPP TS 25.331 clause 8.4.2.2

8.4.1.20.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

Initially the UE is in CELL_DCH state. System Information block type 12 message is modified to assign traffic volume measurement and repotting. RADIO BEARER RECONFIGURATION procedure is used to take UE from CELL_DCH state to CELL_PCH state. While entering in CELL_PCH state from CELL_DCH state UE should start traffic volume measurement as assigned in System Information. When reporting criteria for traffic volume measurement is satisfied the UE shall change state to CELL_FACH and perform CELL UPDATE procedure. After successful completion of CELL UPDATE procedure, UE shall transmit MEASUREMENT REPORT message.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SIB12 modified	Traffic volume measurements and reporting is assigned to UEs
2		←	RADIO BEARER RECONFIGURATION	IE “RRC State Indicator” is set to “CELL_PCH”
3		→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_PCH state from CELL_DCH state UE shall start traffic volume measurement as assigned in System Information (Step 1).

4	→	CELL UPDATE	The UE shall move to CELL FACH state with the message set to "uplink data transmission" in IE "Cell update cause".
5	←	CELL UPDATE CONFIRM	
6	→	MEASUREMENT REPORT	

Specific Message Content

System Information Block type 12 (Step 1)

Information Element	Value/Remarks
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_quality	CPICH RSCP
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	1
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	Variance of RLC Buffer Payload
- Time Interval to take an average	200 msec
- Traffic volume reporting quantity	
- RB buffer payload	False
- RB buffer payload average	False
- RB buffer payload variance	True
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	All States
- Measurement reporting mode	
- Measurement report transfer mode	Acknowledged Mode
- Periodical or event trigger	Periodical
- Report criteria system Information	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	8 seconds
- UE internal measurement system information	Not Present

RADIO BEARER RECONFIGURATION (Step 2)

Use the same message type found in Annex A with condition set to A5 except following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH

CELL UPDATE (Step 4)

Use the same message type found in Annex A with condition set to A5 except following exceptions:

Information Element	Value/remark
Cell Update Cause	Check to see if set to "Uplink data transmission"

MEASUREMENT REPORT (Step 6)

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	0
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer variance	Check to see if this IE is present
- RB identity	1
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	2
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	3
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	4
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	20
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

8.4.1.20.5 Test Requirement

The UE shall send CELL UPDATE message with cause “Uplink data transfer” in step 4 and MEASUREMENT REPORT message in 6.

8.4.1.21 Measurement Control and Report: Traffic volume measurement in URA_PCH state

8.4.1.21.1 Definition

8.4.1.21.2 Conformance requirement

In URA_PCH state, when the reporting criteria is fulfilled for any traffic volume measurement which is being performed in the UE, the UE shall first perform the cell update procedure with the cause "uplink data transmission", in order to transit to CELL_FACH state and then transmit a MEASUREMENT REPORT message on the uplink DCCH

8.4.1.21.3 Test Purpose

To confirm that in URA_PCH state, UE performs assigned traffic volume measurement. When reporting criteria for ongoing traffic volume measurement is fulfilled, the UE shall first perform cell update procedure and then transmit MEASUREMENT REPORT message.

Reference

3GPP TS 25.331 clause 8.4.2.2

8.4.1.21.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

Initially the UE is in CELL_DCH state. MEASUREMENT CONTROL message is sent to UE to assign traffic volume measurement and reporting to be performed in all states except CELL_DCH. The UE is requested to perform periodic reporting of measurements with IE "Reporting amount" is set to 1. RADIO BEARER RECONFIGURATION procedure is used to take UE from CELL_DCH state to URA_PCH state. While entering in URA_PCH state from CELL_DCH state UE should start traffic volume measurement as assigned by MEASUREMENT CONTROL message. When reporting criteria for traffic volume measurement is satisfied the UE shall change state to CELL_FACH and perform CELL UPDATE procedure. After successful completion of CELL UPDATE procedure, UE shall transmit MEASUREMENT REPORT message. The UE shall not send second MEASUREMENT REPORT message after reporting interval, because IE "Reporting amount" in MEASUREMENT CONTROL message is set to 1.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		MEASUREMENT CONTROL	IE "Reporting amount" is set to 1.
2	←		RADIO BEARER RECONFIGURATION	IE "RRC State Indicator" is set to "URA_PCH"
3	→		RADIO BEARER RECONFIGURATION COMPLETE	While entering in URA_PCH state from CELL_DCH state UE shall start traffic volume measurement as assigned in System Information (Step 1).
4	→		CELL UPDATE	The UE shall move to CELL FACH state with the message set to "uplink data transmission" in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	
6	→		MEASUREMENT REPORT	
7				SS waits for 8 Sec to confirm that UE does not send second MEASUREMENT REPORT message

Specific Message Content

MEASUREMENT CONTROL (Step 1)

Information Element	Value/Remark
Measurement Identity	15
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	RACH
- Traffic volume measurement quantity	Variance of RLC Buffer Payload
- Time Interval to take an average	200 msec
- Traffic volume reporting quantity	
- RB buffer payload	False
- RB buffer payload average	False
- RB buffer payload variance	True
- Measurement validity	All but CELL_DCH State
- Report criteria	Periodical Reporting Criteria
- Reporting amount	1
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

RADIO BEARER RECONFIGURATION (Step 2)

Use the same message type found in Annex A with condition set to A5 except following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH

CELL UPDATE (Step 4)

Use the same message type found in Annex A with condition set to A5 except following exceptions:

Information Element	Value/remark
Cell Update Cause	Check to see if set to “Uplink data transmission”

MEASUREMENT REPORT (Step 6)

Information Element	Value/Remarks
Measurement identity	15
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	0
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer variance	Check to see if this IE is present
- RB identity	1
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	2
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	3
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	4
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	20
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

8.4.1.21.5 Test Requirement

The UE shall send CELL UPDATE message with cause “Uplink data transfer” in step 4 and MEASUREMENT REPORT message in 6. The UE shall not send MEASUREMENT REPORT message in step 7.

8.4.1.22 Measurement Control and Report: Quality measurements

8.4.1.22.1 Definition

8.4.1.22.2 Conformance requirement

In CELL_DCH state, the UE shall send MEASUREMENT REPORT message when reporting criteria is fulfilled for any ongoing quality measurements.

Reference

3GPP TS 25.331 clause 8.4

8.4.1.22.3 Test Purpose

To confirm that the UE performs quality measurement as specified in MEASUREMENT CONTROL message received. In CELL_DCH state, the UE shall send MEASUREMENT REPORT message when the reporting criteria is fulfilled for any ongoing quality measurement.

8.4.1.22.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108 , depending on the CN domain(s) supported by the UE

Test Procedure

The UE is in CELL_DCH state. MEASUREMENT CONTROL message is sent to UE to assign quality measurement and reporting. As assigned in MEASUREMENT CONTROL message, the UE shall periodically send MEASUREMENT REPORT message reporting BLER of downlink transport channel(s).

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		MEASUREMENT CONTROL	The UE is requested to perform "Quality measurements"
2	→		MEASUREMENT REPORT	
3	→		MEASUREMENT REPORT	UE shall send second MEASUREMENT REPORT message after 64 seconds.

Specific Message Content

MEASUREMENT CONTROL (Step 1)

Information Element	Value/Remark
Measurement identity	16
Measurement command	Setup
- CHOICE measurement type	Quality measurement
- Quality reporting quantity	
- DL transport channel BLER	True
- Transport channel ID list	Not present
- Mode specific Info	fdd : Null
- Reporting criteria	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	64 sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 2,3)

Information Element	Value/Remarks
Measurement identity	16
Measured Results	
- CHOICE measurement	Quality measurement
- BLER measurement results list	
- Transport channel identity	10
- DL transport channel BLER	Check to see if this IE is present
- Mode specific info	fdd: Null
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

8.4.1.22.5 Test Requirement

In step 2 and 3, the UE shall send MEASUREMENT REPORT message to report BLER for downlink DCH transport channel.

3GPP TSG-T1 #13 ***T1-010413***
Cancun, Mexico, November 29 to 30, 2001
3GPP TSG-T1 SIG #20 ***T1S-010350***
Cancun, Mexico, November 26 to 28, 2001

CR-Form-v4

CHANGE REQUEST

⌘ **34.123-1 CR 120** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Update in Clause 8.3.7 InterSystem Handover from UTRAN to GSM
Source:	⌘	MOTOROLA and MCC Task 160
Work item code:	⌘	TEI
Date:	⌘	16-Nov-2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘
1. Addition of 7 New Failure Test cases
2. Specific Message Contents

Summary of change: ⌘
1. New test cases to Check the 7 different Failure scenarios have been added .

2. Specific message content has been modified

   a. The embedded GSM Handover Command shall be formatted as Variable Length BIT STRING without Length Indicator

   b. The UE's reporting of Inter-system message in the Handover From UTRAN Failure Message shall not Be Checked.

3. In test case 8.3.7.5 As the Target GSM traffic Channel is not configured on SS side, the Handover access sent by UE shall not be received by SS.

Consequences if not approved: ⌘ Test Coverage will be affected, Expected Sequence and Specific Message Content shall remain incorrect

Clauses affected: ⌘ Clause 8.3.7 Inter-system hard handover from UTRAN to GSM

Other specs affected: ⌘
☐ Other core specifications ⌘
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘ `Applicable to R99 and later releases`

8.3.7 Inter-system hard handover from UTRAN to GSM

Clauses 8.3.7 contains test procedures to be used for executing Inter-system Handover from UTRAN to GSM tests. Table 8.3.7-1 contains a summary of the different combinations of parameters being tested, together with a reference to the appropriate generic test procedure. If a test uses a parameter which the UE under test does not support, the test shall be skipped. Test cases in this clause are applicable only to the UE supporting both UTRAN and GSM. The test USIM shall support service 27 to carry out these test cases.

Table 8.3.7-1

From	To	State of call	Ref. clause	Exec counter	Remark
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM AMR	U10	8.3.7.1	1	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM EFR	U10	8.3.7.1	2	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.1	3	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM HR	U10	8.3.7.1	4	call active state
UTRAN (Streaming/unknown/ uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.2	1	Same data rate
UTRAN (Streaming/unknown/ uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 28.8 kbps CS data	U10	8.3.7.2	2	Same data rate
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 57.6 kbps CS data	U10	8.3.7.2	3	Same data rate
UTRAN (Streaming/unknown/ uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.3	1	Data rate down grading
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.3	2	Data rate down grading
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 28.8 kbps CS data	U10	8.3.7.3	3	Data rate down grading
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U1	8.3.7.4	1	During call establishment
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.5	1	failure case

UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.6	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.7	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.8	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.9	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.10	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.11	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.12	1	failure case

8.3.7.1 Inter system handover from UTRAN/To GSM/Speech/Success

8.3.7.1.1 Definition

8.3.7.1.2 Conformance requirement

When the UE receives an HANDOVER FROM UTRAN COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.

- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].

- Switch the current connection to the other radio access system.

NOTE 1: Requirements concerning the establishment of the radio connection towards the other radio access system and the signalling procedure are outside the scope of this specification.

NOTE 2: The release of the UMTS radio resources is initiated by the other system.

NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.

Reference(s)

TS 25.331 Clause 8.3.7.3.

8.3.7.1.3 Test purpose

To test that the UE supporting both GSM and UTRAN handovers from a UTRAN serving cell to the indicated channel of GSM target cell when the UE is in the speech call active state and receives an HANDOVER FROM UTRAN COMMAND.

8.3.7.1.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM ARM,

UE supports GSM EFR,

UE supports GSM HR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS starts GSM cell and configures a traffic channel, then sends HANDOVER FROM UTRAN COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the UTRAN cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS through GSM cell.

Depending on the PIXIT parameters the above procedure is executed maximum four times, each time with different target channel in the GSM cell.

Expected sequence

This sequence is performed for a maximum execution counter M = 1, 2, 3, 4, depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM AMR (M = 1); or for GSM EFR (M = 2); or for GSM FR (M = 3); or for GSM HR (M = 4).
3	←		HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM AMR (M = 1); or the target channel for GSM EFR (M = 2); or the target channel for GSM FR (M = 3); or the target channel for GSM HR (M = 4).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	
10	→		SABM	
11	←		UA	
12	→		HANDOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.

Specific message contents

For execution:

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	Now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE GSM message	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator~~BIT STRING(1..512)~~. The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 3

For execution 2:

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE GSM message	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator~~BIT STRING(1..512)~~. The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 2

For execution 3:

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE system	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 1

For execution 4:

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE system	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator~~BIT STRING(1..512)~~. The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 4 in clause 26.6.5.1 of GSM 11.10-1 version 8.2.0 Release 1999, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 1

8.3.7.1.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

8.3.7.2 Inter system handover from UTRAN/To GSM/Data/Same data rate/Success

8.3.7.2.1 Definition

8.3.7.2.2 Conformance requirement

When the UE receives an HANDOVER FROM UTRAN COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.
- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].

- Switch the current connection to the other radio access system.

NOTE 1: Requirements concerning the establishment of the radio connection towards the other radio access system and the signalling procedure are outside the scope of this specification.

NOTE 2: The release of the UMTS radio resources is initiated by the other system.

NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.

Reference(s)

TS 25.331 Clause 8.3.7.3.

8.3.7.2.3 Test purpose

To test that the UE handovers to the indicated channel of same data rate in the GSM target cell when it is in the data call active state in the UTRAN serving cell and receives an HANDOVER FROM UTRAN COMMAND.

8.3.7.2.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 or section 26.13.1.3 (for HSCSD) shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports UTRAN Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports UTRAN Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports UTRAN Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports GSM 14.4 kbps data (HSCSD or full rate traffic channel for 14.4 kbit/s user data (TCH/F14.4)),

UE supports GSM 28.8 kbps data (HSCSD or enhanced circuit switched full rate traffic channel for 28.8 kbit/s user date (E-TCH/F28.8)),

UE supports GSM 57.6 kbps data,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

Test Procedure

The SS starts the UTRAN cell and brings the UE into data call active state (CC state U10) with a suitable configuration (e.g. Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs for M = 1). The SS starts GSM cell and configures a traffic channel (e.g. 14.4 kbps data channel for M = 1), then sends HANDOVER FROM UTRAN COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS in GSM cell.

Depending on the PIXIT parameters the above procedure is executed maximum three times, each time with different target channel in the GSM cell.

Expected sequence

This sequence is performed for a maximum execution counter M = 1, 2, 3, depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1, the configuration is: Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 1); Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 2); Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 3).
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM 14.4 kbps data (M = 1); or for GSM 28.8 kbps data (M = 2); or for GSM 57.6 kbps data (M = 3).
3	←		HANDOVER FROM UTRAN COMMANDGSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM 14.4 kbps data (M = 1); or for GSM 28.8 kbps data (M = 2); or for GSM 57.6 kbps data (M = 3).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	
10	→		SABM	
11	←		UA	
12	→		HANDOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.

Specific message contents

For execution :

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE GSM message	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

If the UE supports 14.4 kbps single slot:

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = data, 14.5 kbit/s radio interface rate (14.4 kbit/s user data (TCH/F14.4))

If the UE supports HSCSD:

HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 11.10-1, Release 1999, except that the Description of a multi-slot configuration supporting 14.4 kbps user data.

For execution 2:

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE GSM message	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator~~BIT STRING(1..512)~~. The contents of the HANDOVER COMMAND see next table.

If the UE supports enhanced circuit switched full rate traffic channel for 28.8 kbps user data:

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = data, 29.0 kbit/s radio interface rate (28.8 kbit/s user data (E-TCH/F28.8))

If the UE supports HSCSD:

HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 11.10-1, Release 1999, except that the Description of a multi-slot configuration supporting 28.8 kbps user data.

For execution 3:

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE GSM message	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator~~as BIT STRING(1..512)~~. The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 11.10-1, Release 1999, except that the Description of a multi-slot configuration supporting 57.6 kbps user data.

8.3.7.2.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

8.3.7.3 Inter system handover from UTRAN/To GSM/Data/Data rate down grading/Success

8.3.7.3.1 Definition

8.3.7.3.2 Conformance requirement

When the UE receives an HANDOVER FROM UTRAN COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.
- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].
- Switch the current connection to the other radio access system.

NOTE 1: Requirements concerning the establishment of the radio connection towards the other radio access system and the signalling procedure are outside the scope of this specification.

NOTE 2: The release of the UMTS radio resources is initiated by the other system.

NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.

Reference(s)

TS 25.331 Clause 8.3.7.3.

8.3.7.3.3 Test purpose

To test that the UE handovers to the indicated channel of lower data rate in the GSM target cell when it is in the data call active state in the UTRAN serving cell and receives an HANDOVER FROM UTRAN COMMAND.

8.3.7.3.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 or section 26.13.1.3 (for HSCSD) shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports UTRAN Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports UTRAN Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports GSM 14.4 kbps data (HSCSD or full rate traffic channel for 14.4 kbit/s user data (TCH/F14.4)),

UE supports GSM 28.8 kbps data (HSCSD or enhanced circuit switched full rate traffic channel for 28.8 kbit/s user date (E-TCH/F28.8)),

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

Test Procedure

The SS starts the UTRAN cell and brings the UE into data call active state (CC state U10) with a suitable configuration (e.g. Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs for M = 1). The SS starts GSM cell and configures a traffic channel (e.g. 14.4 kbps data channel for M = 1), then sends HANDOVER FROM UTRAN COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS in GSM cell.

Depending on the PIXIT parameters the above procedure is executed maximum three times, each time with different target channel in the GSM cell.

Expected sequence

This sequence is performed for a maximum execution counter M = 1, 2, 3, depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1, the configuration is: Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 1); Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 2 and 3).
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM 14.4 kbps data (M = 1 and 2); or for GSM 28.8 kbps data (M = 3).
3	←		HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM 14.4 kbps data (M = 1 and 2); or for GSM 28.8 kbps data (M = 3).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	
10	→		SABM	
11	←		UA	
12	→		HANDOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.

Specific message contents

For execution 1:

Same as the message contents of clause 8.3.7.2 for M = 1.

For execution 2:

Same as the message contents of clause 8.3.7.2 for M = 1.

For execution 3:

Same as the message contents of clause 8.3.7.2 for M = 2.

8.3.7.3.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

8.3.7.4 Inter system handover from UTRAN/To GSM/Speech/Establishment/Success

8.3.7.4.1 Definition

8.3.7.4.2 Conformance requirement

When the UE receives an HANDOVER FROM UTRAN COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.

- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].

- Switch the current connection to the other radio access system.

NOTE 1: Requirements concerning the establishment of the radio connection towards the other radio access system and the signalling procedure are outside the scope of this specification.

NOTE 2: The release of the UMTS radio resources is initiated by the other system.

NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.

Reference(s)

TS 25.331 Clause 8.3.7.3.

8.3.7.4.3 Test purpose

To test that the UE handovers to the indicated channel in the GSM target cell when it is in the call establishment phase in the UTRAN serving cell and receives an HANDOVER FROM UTRAN COMMAND.

8.3.7.4.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U1 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports UTRAN AMR,

UE supports GSM FR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U1 on cell 2.

Test Procedure

The SS starts the UTRAN cell and the UE is triggered to initialise an MO speech call. During the call establishment phase, after the SS receives SETUP message the SS starts GSM cell and configures a dedicated channel, then sends the UE an HANDOVER FROM UTRAN COMMAND indicating the dedicated channel in the target GSM cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS in GSM cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			To trigger the UE to initialise an MO call
2	→		SETUP	U1
3	SS			The SS starts the GSM cell and configure a dedicated channel SDCCH.
4	←		HANDOVER FROM UTRAN COMMANDGSM	Send on cell 1 (UTRAN cell) and the message indicates: the dedicated channel SDCCH.
5	UE			The UE accepts the handover command and switches to the GSM dedicated channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
6	→		HANDOVER ACCESS	The SS receives this burst on the dedicated channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	→		HANDOVER ACCESS	
10	←		PHYSICAL INFORMATION	
11	→		SABM	
12	←		UA	
13	→		HANDOVER COMPLETE	The SS receives the message on the dedicated channel of GSM cell.

Specific message contents

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE GSM message	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator~~(1..512)~~. The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 4 in clause 26.6.5.2 of GSM 11.10-1 version 8.2.0 Release 1999

8.3.7.4.5 Test requirement

At step 13 the SS shall receive HANDOVER COMPLETE message on the dedicated channel of the GSM cell.

8.3.7.5 Inter system handover from UTRAN/To GSM/Speech/Failure

8.3.7.5.1 Definition

8.3.7.5.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology, it shall

- resume the connection to UTRAN using the resources used before receiving the HANDOVER FROM UTRAN COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

Reference(s)

TS 25.331 Clause 8.3.7.5.

8.3.7.5.3 Test purpose

To test that the UE reactivates the old channel and transmits HANDOVER FROM UTRAN FAILURE message to the network on the old channel in UTRAN cell when it receives an HANDOVER FROM UTRAN COMMAND and the connection to GSM for handover can not be established.

8.3.7.5.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS starts GSM cell without activating any dedicated channel in the cell, then sends HANDOVER FROM UTRAN COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The UE receives the command and configures itself accordingly but can not complete the handover. The SS checks that the handover is failed by checking that the UE transmits the HANDOVER FROM UTRAN FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1
2	SS			The SS configures cell 2 as a GSM cell but without any traffic channel.
3	←		HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM FR which does not exist in the GSM cell.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM.
~~5~~	→		~~HANDOVER ACCESS~~	~~The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.~~
~~6~~	→		~~HANDOVER ACCESS~~	
~~7~~	→		~~HANDOVER ACCESS~~	
~~8~~	→		~~HANDOVER ACCESS~~	
~~n~~	→		~~HANDOVER ACCESS~~	~~The last handover access burst before T3124 times out.~~
~~N+1~~5	→		HANDOVER FROM UTRAN FAILURE	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	physical channel failure
Inter-system message	Not Checked
~~- System type~~	~~GSM~~
~~- Frequency Band~~	~~GSM/DCS 1800 Band~~
~~- CHOICE GSM message~~	~~Single GSM message~~
~~- Message~~	~~Is its presence required, is for FFS~~

8.3.7.5.5 Test requirement

After step n+1 the SS shall receive HANDOVER FROM UTRAN FAILURE message on the old channel of the UTRAN cell.

8.3.7.6 Inter system handover from UTRAN/To GSM/Speech/Failure (L2 Establishment)

8.3.7.6.1 Definition

8.3.7.6.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology , as is unable to obtain L2 establishment it shall

- resume the connection to UTRAN using the resources used before receiving the HANDOVER FROM UTRAN COMMAND message; and
- transmit the HANDOVER FROM UTRAN FAILURE message on uplink DCCH using AM RLC.

Reference(s)

3GPP TS 25.331 clause 8.3.7

TS 04.06 Clause 5.4.1.3

TS 04.08 Clause 3.1.5

8.3.7.6.3 Test purpose

To Test that the UE shall keep its old configuration and transmit a HANDOVER FROM UTRAN FAILURE message, which is set to “physical channel failure” in IE “Inter_RAT HO failure cause”, when it receives a HANDOVER FROM UTRAN COMMAND and the connection to GSM for handover cannot be established due to failure in L2 establishment.

8.3.7.6.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51010-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE: CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. SS activates a dedicated GSM traffic channel then sends HANDOVER FROM UTRAN COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. When the UE does not succeed in establishing the connection to the target radio access technology it shall revert back to UTRA

configuration establish the UTRA physical channel(s) used at the time for reception of HANDOVER FROM UTRAN COMMAND transmit the HANDOVER FROM UTRAN FAILURE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2	SS			The SS configures cell 2 as a GSM cell with traffic channel.
3	←		HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: The target channel.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	Allows a proper transmission by the MS. Sent in unacknowledged mode as soon as the SS has detected a HANDOVER ACCESS. As soon as MS detects it then it stops T3124. On SS side T3105 could be started N times at the maximum as long as the step 8 is not performed
10	→		SABM	To establish L2 connection
11	SS			SS does not sent UA frame
12	UE			On T200 expiration, SS sends N200 times the SABM frame (steps 10) Then MS deactivates new channels and reactivates old UTRA resources it had before receiving the handover command
13	→		HANDOVER FROM UTRAN FAILURE	The SS receives the message on the old channel of UTRAN cell. Sent in acknowledge mode The cause in the IE “inter-RAT change failure” is set to “physical channel failure”

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	physical channel failure
Inter-system message	Not Checked

8.3.7.6.5 Test requirement

The SS shall receive HANDOVER FROM UTRAN FAILURE message on the old channel of the UTRAN cell.

8.3.7.7 Inter system handover from UTRAN/To GSM/Speech/Failure (L1 Synchronization)

8.3.7.7.1 Definition

8.3.7.7.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology, as is unable to obtain L1 synchronization it shall

- resume the connection to UTRAN using the resources used before receiving the HANDOVER FROM UTRAN COMMAND message; and

- transmit the HANDOVER FROM UTRAN FAILURE message on uplink DCCH using AM RLC.

Reference(s)

TS 25.331 Clause 8.3.7.5

TS 04.06 Clause 5.4.1

8.3.7.7.3 Test purpose

To Test that the UE shall keep its old configuration and transmit a HANDOVER FROM UTRAN FAILURE message, which is set to “physical channel failure” in IE “Inter_RAT HO failure cause”, when it receives a HANDOVER FROM UTRAN COMMAND and the connection to GSM for handover cannot be established due failure in L1 Synchronization.

8.3.7.7.4 Method of test

Initial conditions

System Simulator : 2 cell - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51.010 version 4.4.0 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10). The SS starts GSM cell activating dedicated channel in the cell, then sends HANDOVER FROM UTRAN COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The power level of target GSM cell is kept at very low level. The UE receives the command and configures itself accordingly but cannot complete the handover. The SS checks that the handover is failed by checking that the UE transmits the HANDOVER FROM UTRAN FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1.
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel.
3	←		HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: The target channel for GSM FR in GSM Cell.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	SS			The target GSM Trafic Channel is Switched off
8	→		HANDOVER FROM UTRAN FAILURE	The SS receives the message on the old channel of UTRAN cell. The cause in the IE “inter-RAT change failure” is set to “physical channel failure”

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	physical channel failure
Inter-system message	Not Checked

8.3.7.7.5 Test requirement

The SS shall receive HANDOVER FROM UTRAN FAILURE message on the old channel of the UTRAN cell.

8.3.7.8 Inter system handover from UTRAN/To GSM/Speech/Failure (Invalid Inter-RAT message)

8.3.7.8.1 Definition

8.3.7.8.2 Conformance requirement:

If the UE does not succeed to establish the connection to the other radio access technology, as the Inter-RAT message received is invalid, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

Reference

3GPP TS 25.331 clause 8.3.7.6

8.3.7.8.3 Test purpose

To Test that the UE shall keep its old configuration and transmit a HANDOVER FROM UTRAN FAILURE message, which is set to “Inter-RAT protocol error” in IE “Inter_RAT HO failure cause”, when it receives a Handover From UTRAN message, with the IE "Inter-RAT message" received within the HANDOVER FROM UTRAN COMMAND message not including a valid inter RAT handover message in accordance with the protocol specifications for the target RAT.

8.3.7.8.4 Method of test

Initial conditions

System Simulator : 1 UTRAN cell.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS then sends an HANDOVER FROM UTRAN COMMAND message not including a valid inter RAT handover message in accordance with the protocol specifications for the target RAT, to the UE through DCCH of the serving UTRAN cell. The UE receives the command and finds that the Inter Rat message is Invalid. The SS checks that the handover is failed by checking that the UE transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2	←		HandoverFromUTRAN Command-GSM	Send on cell 1 (UTRAN cell) and the message carries an Invalid HANDOVER FROM UTRAN COMMAND -GSM
3	→		InterSystemHandoverFailure	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	Now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE GSM message	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Contains an Invalid Handover Command.

. HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	Inter-RAT protocol error
Inter-system message	Not checked

8.3.7.8.5 Test requirement

In step 3 the SS shall receive INTER-SYSTEM HANDOVER FAILURE message on the old channel of the UTRAN cell.

8.3.7.9 Inter system handover from UTRAN/To GSM/Speech/Failure (Unsupported configuration)

8.3.7.9.1 Definition

8.3.7.9.2 Conformance requirement:

If the UE does not succeed to establish the connection to the other radio access technology, as the configuration specified in the Inter-RAT message is not supported, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

Reference

3GPP TS 25.331 clause 8.3.7.8

8.3.7.9.3 Test purpose

To Test that the UE shall keep its old configuration and transmit a HANDOVER FROM UTRAN FAILURE message, which is set to “configuration unsupported” in IE “Inter_RAT HO failure cause”, when it receives a Handover From UTRAN message, with the IE "Inter-RAT message" received within the HANDOVER FROM UTRAN COMMAND message including a Configuration not Supported by the UE.

8.3.7.9.4 Method of test

Initial conditions

System Simulator : 1 UTRAN cell.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS then sends an HANDOVER FROM UTRAN COMMAND message including a Configuration not Supported by the UE in inter RAT handover message, to the UE through DCCH of the serving UTRAN cell. The UE receives the command and finds that the configuration given in Inter Rat message is not supported. The SS checks that the handover is failed by checking that the UE transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2	←		HandoverFromUTRAN Command-GSM	Send on cell 1 (UTRAN cell) and the message carries an unsupported configuration.
3	→		InterSystemHandoverFailure	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Activation time	Now
RAB Info	Not present
Inter-system message	
- System type	GSM
- Frequency Band	GSM/DCS 1800 Band
- CHOICE GSM message	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Contains a Configuration not supported By the UE (Handover to a Band not supported by the UE)

. HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	configuration unsupported
Inter-system message	Not checked

8.3.7.9.5 Test requirement

In step 3 the SS shall receive INTER-SYSTEM HANDOVER FAILURE message on the old channel of the UTRAN cell.

8.3.7.10 Inter system handover from UTRAN/To GSM/Speech/Failure (Reception by UE in CELL_FACH)

8.3.7.10.1 Definition

8.3.7.10.2 Conformance requirement:

If the UE does not succeed to establish the connection to the other radio access technology, as the Message received is not compatible with receiver state, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

Reference

3GPP TS 25.331 clause 8.3.7.8a

8.3.7.10.3 Test purpose

The UE shall keep its old configuration when the UE receives a HANDOVER FROM UTRAN COMMAND message when in CELL_FACH state and then transmit a HANDOVER FROM UTRAN COMMAND FAILURE message on the DCCH using AM RLC, which sets value “protocol error” in IE “Inter_RAT HO failure cause” and is set to “Message not compatible with receiver state” in IE “Protocol error cause”.

8.3.7.10.4 Method of test

Initial conditions

System Simulator : 1 UTRAN Cell

UE : RRC State CS-DCCH_FACH (state 6-6) as specified in clause 7.4 of TS 34.108, on Cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in RRC is in State CS-DCCH_FACH (state 6-6) as specified in clause 7.4 of TS 34.108, on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into RRC Cell__FACH_DTCH. It then Transmits Radio Bearer reconfiguration PDU to move UE to Cell_FACH state. The SS starts GSM cell without activating any dedicated channel in the cell, then sends INTER-SYSTEM HANDOVER COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The UE receives the command and configures itself accordingly but cannot complete the handover. The SS checks that the handover is failed by checking that the UE transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into CS-DCCH_FACH (state 6-6) _FACH state in cell 1
2	←		InterSystemHandoverCommand-GSM	Send on cell 1 (UTRAN cell) and the message indicates: The target channel for GSM
3	→		InterSystemHandoverFailure	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	Protocol Error
-Diagnostics Type	Type1
-Protocol Error Cause	Message Not Compatible With Receiver State
Inter-system message	Not Checked

8.3.7.10.5 Test requirement

After step 2 the SS shall receive INTER-SYSTEM HANDOVER FAILURE message on the old channel of the UTRAN cell.

8.3.7.11 Inter system handover from UTRAN/To GSM/Speech/Failure (Invalid message reception)

8.3.7.11.1 Definition

8.3.7.11.2 Conformance requirement:

If the UE does not succeed to establish the connection to the other radio access technology, as the Handover Message received is short to decode into a valid message, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

Reference

3GPP TS 25.331 clause 8.3.7

8.3.7.11.3 Test purpose

The UE shall keep its old configuration when the UE receives a Handover From UTRAN message, which will be short to decode into a valid Handover From UTRAN message. It shall then transmit an RRC STATUS message on the uplink DCCH. The IE "Protocol error information" shall contain an IE "Protocol error cause" set to "ASN.1 violation or encoding error";

8.3.7.11.4 Method of test

Initial conditions

System Simulator : 1 UTRAN cell.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS then sends an HANDOVER FROM UTRAN COMMAND message, which will be short to decode into a valid Handover From UTRAN message, to the UE through DCCH of the serving UTRAN cell. The SS checks that the handover is failed by checking that the UE transmits an RRC STATUS message on the uplink DCCH.

The IE "Protocol error information" shall contain an IE "Protocol error cause" set to "ASN.1 violation or encoding error";

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2	←		HandoverFromUTRAN Command-GSM	Send on cell 1 (UTRAN cell) and the message is short in length to be decoded into a valid Handover From UTRAN command
3	→		RRCStatus	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

HANDOVER FROM UTRAN COMMAND-GSM

A Short Message that shall not result in a valid Handover From UTRAN Command shall be sent.

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol error information	Checked to see if set to “ASN.1 Violation or Encoding error”

8.3.7.11.5 Test requirement

In step 3 the SS shall receive RRC Status message in the UTRAN cell.

8.3.7.12 Inter system handover from UTRAN/To GSM/Speech/Failure (Physical channel Failure and Reversion Failure)

8.3.7.12.1 Definition

8.3.7.12.2 Conformance requirement:

If the UE does not succeed to establish the connection to the other radio access technology and fail to resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message, it shall

- perform a cell update procedure; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

Reference

3GPP TS 25.331 clause 8.3.7.5

8.3.7.12.3 Test purpose

The UE shall perform a cell update when the UE fails to revert to the old configuration after the detection of physical channel failure in the target RAT cell as given in HANDOVER FROM UTRAN procedure. After the

UE completes cell update procedure, the UE transmit HANDOVER FROM UTRAN FAILURE message on the DCCH using AM RLC, which is set IE “failure cause” to “physical channel failure”.

8.3.7.12.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS starts GSM cell without activating any dedicated channel in the cell, then sends INTER-SYSTEM HANDOVER COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The UE receives the command and configures itself accordingly but cannot complete the handover and wants to revert to the old configuration, but the UE cannot revert to the old configuration because the SS shall not use the old configuration. The UE transmit CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “radio link failure”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell, on the DCCH using AM RLC, setting the value of IE “failure cause” to ” physical channel failure”.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2	SS			The SS configures cell 2 as a GSM cell but without any traffic channel.
3	←		HandoverFromUTRAN Command-GSM	Send on cell 1 (UTRAN cell) and the message indicates: The target channel for GSM FR, which does not exist in the GSM cell.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the InterSystemHandoverCommand-GSM
5	SS			SS removes the Physical channel (DPCH) allocated to the mobile before handover command transmission
6	→		CELL UPDATE	The value "radio link failure" shall be set in IE "Cell update cause".
7	←		CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
8				The SS configure the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
9	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
10	→		InterSystemHandoverFailure	The IE "failure cause" shall be set to "physical channel failure"

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

CELL UPDATE (Step n+1)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	"radio link failure"

CELL UPDATE CONFIRM (Step n+2)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
RRC State indicator	CELL_DCH
Frequency info	
- UARFCN uplink (Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink (Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- SCCPCH information for FACH	Not Present

HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	physical channel failure
Inter-system message	Not Checked

8.3.7.12.5 Test requirement

In step 3 the SS shall receive RRC Status message in the UTRAN cell.

3GPP TSG-T1 Meeting #13 **T1-010414**
Cancun, Mexico, 29th – 30th November 2001

3GPP TSG-T1 SIG Meeting #20 **T1S-010359r1**
Cancun, Mexico, 26th – 28th November 2001

CR-Form-v4

CHANGE REQUEST

⌘ **TS 34.123-1** **CR** **121** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction to Annex A
Source:	⌘	MCI
Work item code:	⌘	TEI
Date:	⌘	26th November 01
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘ Many technical errors are found.

Summary of change: ⌘ Rewording of some text to improve readability.

Updating of the IEs according to June version TS 25.331.

~~All radio bearer control messages are revised to base on example radio bearer configuration found in clause 6.10 of TS 34.108.~~

For the values of the IE in the default message content, where applicable, references to clause 6.10 of TS 34.108 are provided. ~~RRC CONNECTION SETUP message is revised to base on example radio bearer configuration found in clause 6.10 of TS 34.108.~~

Condition A2 and A3 of RADIO BEARER SETUP message have been moved to clause 9 of TS 34.108.

Condition A7 and A8 of RADIO BEARER SETUP message has been added as these messages are needed for CS UE to transit from CELL_FACH to CELL_DCH.

Radio bearer control failure messages are added.

		A second multiplexing option for RB mapping info is added to the SRB in RRC CONNECTION SETUP and RADIO BEARER SETUP messages. ACTIVE SET UPDATE Addition of radio link is all specified in the individual test cases, therefore it is not necessary to do so in the default message. IE “Radio link addition information” is set to “Not Present”. MEASUREMENT CONTROL Cell 1 (with primary scrambling code) is always assigned a cell id of 1, instead of 0. This is done to match exactly with the cell numbering used by SS (i.e. cell id in SIB 11, SIB 12, MEASUREMENT CONTROL and MEASUREMENT REPORT = cell number). From ETRI, Editorial modification (Annex A. introduction) PHYSICAL CHANNEL RECONFIGURATION Descriptions of ‘Frequency info’ are changed to ‘Reference to clause 5.1 Test frequencies’ RADIO BEARER SETUP PS domain the RAB Identity should be the same as NSAPI. The range of NSAPI starts from 5. Descriptions of ‘Frequency info’ are changed to ‘Reference to clause 5.1 Test frequencies’ RRC CONNECTION SETUP (Transition to CELL_FACH) ‘Transmission RLC discard’ for UM RLC is changed to ‘timer based no explicit’ Descriptions of ‘Frequency info’ are changed to ‘Reference to clause 5.1 Test frequencies’ TRANSPORT CHANNEL RECONFIGURATION Descriptions of ‘Frequency info’ are changed to ‘Reference to clause 5.1 Test frequencies’.
Consequences if not approved:	⌘	The default message will result in wrong test conditions.

Clauses affected:	⌘	Annex A		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Affects Rel’99 and Rel’4 UE test cases.		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Annex A (normative):
Default RRC Message Contents

This clause contains the default values of RRC messages, other than those specified in TS 34.108 clauses 6 and 9. Unless indicated otherwise in specific test cases, they shall be transmitted by the system simulator in RRC messages, and which are required to be received from the UE under test.
The necessary L3 messages are listed in alphabetic order, with the exception of the SYSTEM INFORMATION messages, where it is the information elements which are listed in alphabetic order (this is because some information elements occur in several SYSTEM INFORMATION types).
In this clause, decimal values are normally used. However, sometimes a hexadecimal value, indicated by an "H", or a binary value, indicated by a "B" is used.

Default SYSTEM INFORMATION:

NOTE: SYSTEM INFORMATION BLOCK TYPE 1 (except for PLMN type “GSM-MAP”), SYSTEM INFORMATION BLOCK TYPE 8, SYSTEM INFORMATION BLOCK TYPE 9, SYSTEM INFORMATION BLOCK TYPE 10, SYSTEM INFORMATION BLOCK TYPE 14, SYSTEM INFORMATION BLOCK TYPE 15 and SYSTEM INFORMATION BLOCK TYPE 16 messages are not used.

Contents of ACTIVE SET UPDATE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI	Not Present
CN information info	Not Present
Downlink counter synchronisation info	Not Present
Maximum allowed UL TX power	33dBm
Radio link addition information	~~(This IE is repeated for addition RL number.)~~Not Present
~~- Primary CPICH info~~	
~~- Primary scrambling code~~	~~The value is for additional cell~~
~~- Downlink DPCH info for each RL~~	
~~- Primary CPICH usage for channel estimation~~	~~Primary CPICH may be used~~
~~- DPCH frame offset~~	~~0 chips~~
~~- Power offset $P_{Pilot-DPDCH}$~~	~~TBD~~
~~- Secondary CPICH info~~	~~Not Present~~
~~- DL channelisation code~~	
~~- Secondary scrambling code~~	~~1~~
~~- Spreading factor~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- Code number~~	~~SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)~~
~~- Scrambling code change~~	~~No change~~

Information Element	Value/remark
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- TFCI combining indicator	TRUE
- SCCPCH Information for FACH	
- Secondary CCPCH info	
- Selection Indicator	Not Present
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- Secondary CPICH info	Not Present
- Secondary scrambling code	1
- SSDT Indicator	FALSE
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Pilot symbol existence	FALSE
- TFCI existence	TRUE
- Fixed or Flexible Position	Flexible
- Timing offset	0
- TFCS	(This IE is repeated for TFC number for PCH and FACH.)
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Addition
- TFCS addition information	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information	Refer to TS34.108 clause 6.10 Parameter Set.
- Power offset information	Not Present
- FACH/PCH information	
- TFS	(PCH)
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number.)
- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
- Transport Channel Identity	12 (for PCH)
- CTCH indicator	FALSE
- TFS	(FACH)
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number.)
- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
- Transport Channel Identity	13 (for FACH)
- CTCH indicator	FALSE
CHOICE mode	FDD

Information Element	Value/remark
~~- References to system information blocks~~	
~~- Scheduling information~~	
~~- CHOICE Value tag~~	~~Cell Value tag~~
~~- Cell Value tag~~	~~1~~
~~- SEG_COUNT~~	~~3~~
~~- SIB_REP~~	~~128~~
~~- SIB_POS~~	~~26~~
~~- SIB_POS offset info~~	
~~- SIB_OFF~~	~~2~~
~~- SIB_OFF~~	~~2~~
~~- SIB type SIBs only~~	~~System Information Type 5~~
~~- Scheduling information~~	
~~- CHOICE Value tag~~	~~Cell Value tag~~
~~- Cell Value tag~~	~~1~~
~~- SEG_COUNT~~	~~3~~
~~- SIB_REP~~	~~128~~
~~- SIB_POS~~	~~42~~
~~- SIB_POS offset info~~	
~~- SIB_OFF~~	~~2~~
~~- SIB_OFF~~	~~2~~
~~- SIB type SIBs only~~	~~System Information Type 6~~
Radio link removal information	~~(This IE is repeated for removal RL number.)~~Not Present
~~- Primary CPICH info~~	
~~- Primary scrambling code~~	~~The value is for removal cell~~
TX Diversity Mode	None
SSDT information	Not Present

Contents of ACTIVE SET UPDATE COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink ACTIVE SET UPDATE message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of ACTIVE SET UPDATE FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink ACTIVE SET UPDATE message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	~~Value will be checked~~Refer to test requirement

Contents of CELL UPDATE message: TM

Information Element	Value/remark
Message Type	
U-RNTI	Checked to see if it is set to the following values
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Checked to see if it is absent
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
START List	Checked to see if the 'CN domain identity' and 'START' IEs are present for all CN domains supported by the UE
- CN domain identity	Checked to see if it is one of the supported CN domains
- START	Checked to see if it is present
AM_RLC error indication (RB2 or RB3)	Checked to see if it is set to 'FALSE'
AM_RLC error indication (RB>3)	Checked to see if it is set to 'FALSE'
Cell update cause	See the test content
Failure cause	Checked to see if it is absent
RB timer indicator	
- T314 expired	Checked to see if it is set to 'FALSE'
- T315 expired	Checked to see if it is set to 'FALSE'
Measured results on RACH	Not checked

Contents of CELL UPDATE CONFIRM message: UM

Information Element	Value/remark
Message Type	
U-RNTI	If this message is sent on CCCH, use the following values. Else, this IE is absent.
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Selects an arbitrary integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
Activation time	Not Present – use default value
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC State indicator	CELL_FACH
UTRAN DRX cycle length coefficient	Not Present
RLC re-establish indicator (RB2 or RB3)	FALSE
RLC re-establish indicator (RB>3)	FALSE
CN information info	Not Present
URA identity	0000 0000 0001B
RB information to release list	Not Present
RB information to reconfigure list	Not Present
RB information to be affected list	Not Present
Downlink counter synchronisation info	Not Present
UL Transport channel information common for all transport channels	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured TrCH information list	Not Present
CHOICE Mode	~~Not Present~~FDD
- CPCH set ID	Not Present
- Added or Reconfigured TrCH information for DRAC list	Not Present
DL Transport channel information common for all transport channels	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured TrCH information list	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE channel requirement	Not Present
CHOICE mode	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	Not Present
Downlink information per radio link list	Not Present

Contents of MEASUREMENT CONTROL message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an unused integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Measurement Reporting/Event Trigger Reporting Mode	Event Trigger
Additional measurement list	Not Present
CHOICE Measurement type	Intra-frequency measurement
- Intra-frequency measurement	
- Intra-frequency cell info	
- New intra-frequency cell	
- Intra-frequency cell-id	~~0~~1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN number	FALSE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	150
- Primary CPICH Tx power	Not Present
- TX Diversity indicator	FALSE
- Intra-frequency measurement quantity	
- Filter coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- CPICH Ec/N0 reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- CPICH Ec/N0 reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected set cells	Not Present
- Reporting cell status	
- CHOICE reported cell	Report cell within active set and/or monitored cells on used frequency
- Maximum number of reported cells	2
- Measurement validity	Not Present
- CHOICE report criteria	Periodic reporting criteria

- Amount of reporting	Infinity
- Reporting interval	64 sec
DPCH Compressed mode status info	Not Present

Contents of MEASUREMENT CONTROL FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it's set to the identical value for the same IE in the downlink MEASUREMENT CONTROL message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	See the test content

Contents of MEASUREMENT REPORT message: AM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Measurement identity	1
Measured Results	
- Intra-frequency measured results	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is absent
- Cell synchronisation information	Checked that this IE is absent
- Primary CPICH info	
- Primary scrambling code	150
- CPICH Ec/N0	Checked that this IE is absent
- CPICH RSCP	Checked that this IE is present
- Pathloss	Checked that this IE is absent
Measured results on RACH	Checked that this IE is absent
Additional measured results	Checked that this IE is absent
Event results	Checked that this IE is absent

Contents of PAGING TYPE 1 message: TM (SMS in CS)

Information Element	Value/remark
Message Type	
Paging record list	
- Paging record	
- CHOICE Used paging identity	CN identity
- Paging cause	Terminating Low Priority Signalling
- CN domain identity	CS domain
- CHOICE UE identity	
- IMSI (GSM-MAP)	Set to the same octet string as in the IMSI stored in the TEST USIM card
BCCH modification info	Not Present

Contents of PAGING TYPE 1 message: TM (SMS in PS)

Information Element	Value/remark
Message Type	
Paging record list	
- Paging record	
- CHOICE Used paging identity	CN identity
- Paging cause	Terminating Low Priority Signalling
- CN domain identity	PS domain
- CHOICE UE identity	
- IMSI (GSM-MAP)	Set to the same octet string as in the IMSI stored in the TEST USIM card
BCCH modification info	Not Present

Contents of PAGING TYPE 2 message: AM (Speech in CS)

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Paging cause	Terminating Conversational Call
CN domain identity	CS domain
Paging record type identifier	Select the same type as in the IE “Initial UE Identity” in RRC CONNECTION REQUEST” message.

Contents of PHYSICAL CHANNEL RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type	A1, A2, A3, A4, A5, A6	
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.1 ~~present~~ 23-2. If integrity protection is indicated to be active, this IE is with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient	A1, A2, A3, A4, A5, A6	Not Present
CN information info		Not Present
URA identity		Not Present
Downlink counter synchronisation info		Not Present
Frequency info		
- UARFCN uplink (Nu)		Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~
- UARFCN downlink (Nd)		Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~
Maximum allowed UL TX power		33dBm
CHOICE *channel requirement*	~~A1, A2, A3, A5, A6~~	Not Present
~~Uplink DPCH info~~CHOICE *channel requirement*	A1, A2, A3, A4	Uplink DPCH info
- Uplink DPCH power control info		
- DPCCH power offset		-6dB
- PC Preamble		1 frame
- SRB delay		7 frames
- Power Control Algorithm		Algorithm1
- TPC step size		1dB
- Scrambling code type		Long
- Scrambling code number		0 (0 to 16777215)
- Number of DPDCH		Not Present(1)
- spreading factor		Reference to TS34.108 clause 6.10 Parameter Set~~SF is reference to TS34.108 clause 6.10 Parameter Set~~
- TFCI existence		Reference to TS34.108 clause 6.10 Parameter Set~~TRUE~~
- Number of FBI bit		Reference to TS34.108 clause 6.10 Parameter Set~~Not Present(0)~~
- Puncturing Limit		Reference to TS34.108 clause 6.10 Parameter Set
CHOICE Mode	A1, A2, A3, A4, A5, A6	FDD
- Downlink PDSCH information		Not Present

Information Element	Condition	Value/remark
Downlink information common for all radio links	A1, A2, A3, A4	
- Downlink DPCH info common for all RL		
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
- DPC mode		0 (single)
- CHOICE mode		FDD
- Power offset $P_{Pilot-DPDCH}$		~~TBD~~0
- DL rate matching restriction information		Not Present
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Fixed or Flexible Position		Reference to TS34.108 clause 6.10 Parameter Set~~Flexible~~
- TFCI existence		Reference to TS34.108 clause 6.10 Parameter Set~~TRUE~~
- ~~Number of bits for Pilot bits(SF=128,256)~~CHOICE SF		~~Not Present~~Otherwise
~~Downlink information common for all radio links~~	~~A2~~	
~~- Downlink DPCH info common for all RL~~		
~~- Timing indicator~~		~~Maintain~~
~~- CFN-targetSFN frame offset~~		~~Not Present~~
~~- Downlink DPCH power control information~~		
~~- DPC mode~~		~~0 (single)~~
~~- CHOICE mode~~		~~FDD~~
~~- Power offset $P_{Pilot-DPDCH}$~~		~~0~~
~~- DL rate matching restriction information~~		~~Not Present~~
~~- Spreading factor~~		~~128~~
~~- Fixed or Flexible Position~~		~~Fixed~~
~~- TFCI existence~~		~~TRUE~~
~~- CHOICE SF~~		~~SF = 128~~
~~- Number of bits for Pilot bits~~		~~4~~
~~Downlink information common for all radio links~~	~~A3~~	
~~- Downlink DPCH info common for all RL~~		
~~- Timing indicator~~		~~Maintain~~
~~- CFN-targetSFN frame offset~~		~~Not Present~~
~~- Downlink DPCH power control information~~		
~~- DPC mode~~		~~0 (single)~~
~~- CHOICE mode~~		~~FDD~~
~~- Power offset $P_{Pilot-DPDCH}$~~		~~0~~
~~- DL rate matching restriction information~~		~~Not Present~~
~~- Spreading factor~~		~~8~~
~~- Fixed or Flexible Position~~		~~Flexible~~
~~- TFCI existence~~		~~TRUE~~
~~- CHOICE SF~~		~~Otherwise~~
~~Downlink information common for all radio links~~	~~A5, A6~~	~~Not Present~~
- DPCH compressed mode info		Not Present
~~- TGPSI~~		~~1~~
~~- TPGS status Flag~~		~~Inactive~~
~~- TGCFN~~		~~(Current CFN + (256 – TTI/10msec)) mod 256~~
~~- Transmission gap pattern sequence configuration parameters~~		
~~- TGMP~~		~~FDD Measurement~~
~~- TGPRC~~		~~62~~
~~- TGSN~~		~~8~~
~~- TGL1~~		~~10~~
~~- TGL2~~		~~5~~
~~- TGD~~		~~15~~
~~- TGPL1~~		~~35~~
~~- TGPL2~~		~~35~~

Information Element	Condition	Value/remark
~~- RPP~~ ~~- ITPITP~~ ~~- CHOICE UL/DL Mode~~ ~~- Downlink compressed mode method~~ ~~- Downlink frame type~~ ~~- DeltaSIR1~~ ~~- DeltaSIRafter1~~ ~~- DeltaSIR2~~ ~~- DeltaSIRafter2~~ ~~- N_Identify_abort~~ ~~- T_Reconfirm_abort~~ - TX Diversity mode - SSDT information - Default DPCH Offset Value		~~Mode 1~~ ~~Mode 1~~ ~~DL~~ ~~SF/2~~ ~~A~~ ~~2.0~~ ~~1.0~~ ~~Not Present~~ ~~Not Present~~ ~~Not Present~~ ~~Not Present~~ None Not Present ~~0~~Not Present
Downlink information common for all radio links	A5, A6	Not Present
Downlink information for each radio links - Primary CPICH info - Primary scrambling code - PDSCH with SHO DCH info - PDSCH code mapping - Downlink DPCH info for each RL - Primary CPICH usage for channel estimation - DPCH frame offset - Power offset $P_{Pilot-DPDCH}$ - Secondary CPICH info - DL channelisation code - Secondary scrambling code - Spreading factor - Code number - Scrambling code change - TPC combination index - SSDT Cell Identity - Closed loop timing adjustment mode - SCCPCH information for FACH	A1, A2,A3,A4	 100 Not Present Not Present Primary CPICH may be used 0 chips ~~TBD~~0 Not Present ~~1~~5 Reference to TS34.108 clause 6.10 Parameter Set ~~SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)~~0 No change 0 Not Present~~-a~~ Not Present Not Present
~~-Downlink information for each radio link~~ ~~- Choice mode~~ ~~- Primary CPICH info~~ ~~- Primary scrambling code~~ ~~- PDSCH with SHO DCH info~~ ~~- PDSCH code mapping~~ ~~- Downlink DPCH info for each RL~~ ~~- Primary CPICH usage for channel estimation~~ ~~- DPCH frame offset~~ ~~- Secondary CPICH info~~ ~~- Secondary scrambling code~~ ~~- channelisation code~~ ~~- DL channelisation code~~ ~~- Secondary scrambling code~~ ~~- Spreading factor~~ ~~- Code number~~ ~~- Scrambling code change~~ ~~- TPC combination index~~ ~~- SSDT Cell Identity~~ ~~- Closed loop timing adjustment mode~~ ~~- SCCPCH information for FACH~~	~~A2~~	 ~~FDD~~ ~~100~~ ~~Not Present~~ ~~Not Present~~ ~~Primary CPICH may be used~~ ~~0 chips~~ ~~Not Present~~ ~~5~~ ~~128~~ ~~0~~ ~~No change~~ ~~0~~ ~~Not Present~~ ~~Not Present~~ ~~Not Present~~
~~- Downlink information for each radio link list~~ ~~- Choice mode~~	~~A3~~	 ~~FDD~~

Information Element	Condition	Value/remark
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Secondary CPICH info		Not Present
- DL channelisation code		
- Secondary scrambling code		5
- Spreading factor		8
- Code number		0
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		Not Present
- Closed loop timing adjustment mode		Not Present
- SCCPCH information for FACH		Not Present
- Downlink information for each radio link	A5	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not Present
- SCCPCH Information for FACH		Not Present
- Downlink information for each radio link	A6	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		150
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not Present
- SCCPCH Information for FACH		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Note: The radio bearer configurations used here are served as example only, test operator can choose to use other radio bearer configurations.

Contents of PHYSICAL CHANNEL RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it's set to identical value of the same IE in the downlink PHYSICAL CHANNEL RECONFIGURATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
CHOICE mode	FDD
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM, (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
~~CHOICE mode~~	~~FDD~~
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identitifer	Checked to see if it is set to identical value of the same IE in the downlink PHYSICAL CHANNEL RECONFIGURATION message.
Integrity check info	The presence if this IE is dependent on IXIT statements in TS 34.123-2. if integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Checked to see if it meets test requirement

Contents of RADIO BEARER SETUP message: AM or UM

Information Element	Condition	Value/remark
Message Type	A1, A4, A5, A6,A7,A8	
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If ciphering is indicated to be active, this IE present with the values of the sub IEs as stated below. Else, this IE is omitted.
- Ciphering mode command		Start/restart
- Ciphering algorithm		Use one of the supported ciphering algorithms
- Ciphering activation time for DPCH		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Radio bearer downlink ciphering activation time info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, ~~A2,~~ ~~A3,~~ A4,A7,A8	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient	A1, A4, A5, A6,A7,A8	Not Present
CN information info		Not Present
URA identity		Not Present
Signalling RB information to setup		Not Present
RAB information for setup	A1,A7	
- RAB info		
- RAB identity		0000 0001B

Information Element	Condition	Value/remark
- CN domain identity		CS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		useT314
~~- T314~~		~~20 seconds~~
- RB information to setup		
- RB identity		10
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		~~TRUE~~FALSE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		~~TRUE~~FALSE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		Not Present~~7~~
- CHOICE RLC size list		~~All~~Configured
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		Not Present~~7~~
RAB information for setup	A8	
- RAB info		
- RAB identity		0000 0001B
- CN domain identity		CS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		useT314
- RB information to setup		
- RB identity		10
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		FALSE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		FALSE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		Not Present
- CHOICE RLC size list		Configured
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		Not Present
- RB identity		11
- PDCP info		Not Present
- CHOICE RLC info type		RLC info

Information Element	Condition	Value/remark
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		FALSE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		FALSE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		2
- Logical channel identity		Not Present
- CHOICE RLC size list		Configured
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		7
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		Not Present
- RB identity		12
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		FALSE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		FALSE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		3
- Logical channel identity		Not Present
- CHOICE RLC size list		Configured
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		8
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		Not Present
~~RAB information for setup~~	~~A2~~	
~~- RAB info~~		
~~- RAB identity~~		~~0000 0001B~~
~~- CN domain identity~~		~~CS domain~~
~~- NAS Synchronisation Indicator~~		~~Not Present~~
~~- Re-establishment timer~~		
~~- T314~~		~~20 seconds~~
~~- RB information to setup~~		
~~- RB identity~~		~~10~~
~~- PDCP info~~		~~Not Present~~
~~- CHOICE RLC info type~~		~~RLC info~~
~~- CHOICE Uplink RLC mode~~		~~TM RLC~~
~~- Transmission RLC discard~~		~~Not Present~~
~~- Segmentation indication~~		~~TRUE~~
~~- CHOICE Downlink RLC mode~~		~~TM RLC~~
~~- Segmentation indication~~		~~TRUE~~
~~- RB mapping info~~		
~~- Information for each multiplexing option~~		

Information Element	Condition	Value/remark
- RLC logical channel mapping indicator		Not Present
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		7
- RB information to setup		
- RB identity		11
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		2
- Logical channel identity		8
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		7
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		8
- RB information to setup		(This IE is needed for 12.2 kbps and 10.2 kbps)
- RB identity		12
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		3
- Logical channel identity		9
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		8
- DL DSCH Transport channel identity		Not Present

Information Element	Condition	Value/remark
- Logical channel identity		9
RAB information for setup	A3, A4	
- RAB info		
- RAB identity		0000 0001B
- CN domain identity		PS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		useT314
- T314		20 seconds
- RB information to setup		
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		AM RLC
- Transmission RLC discard		
- SDU discard mode		Max DAT retransmissions
- MAX_DAT		4
- Timer_MRW		100
- MaxMRW		4
- Transmission window size		8
- Timer_RST		500
- Max_RST		4
- Polling info		
- Timer_poll_prohibit		200
- Timer_poll		200
- Poll_SDU		1
- Last transmission PDU poll		TRUE
- Last retransmission PDU poll		TRUE
- Poll_Windows		99
- CHOICE Downlink RLC mode		AM RLC
- In-sequence delivery		TRUE
- Receiving window size		8
- Downlink RLC status info		
- Timer_status_prohibit		200
- Timer_EPC		200
- Missing PDU indicator		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		Not Present7
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		Not Present7
RAB information for setup	A4, A5, A6	
- RAB info		(AM DTCH for PS domain)
- RAB identity		0000 0001B0101B
- CN domain identity		PS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		useT314
- T314		20 seconds
- RB information to setup		
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		RLC info

Information Element	Condition	Value/remark
- CHOICE Uplink RLC mode		AM RLC
- Transmission RLC discard		
- CHOICE SDU discard mode		Max DAT retransmissions
- MAX_DAT		4
- Timer_MRW		100
- MaxMRW		4
- Transmission window size		8
- Timer_RST		500
- Max_RST		4
- Polling info		
- Timer_poll_prohibit		200
- Timer_poll		200
- Poll_SDU		1
- Last transmission PDU poll		TRUE
- Last retransmission PDU poll		TRUE
- Poll_Windows		99
- CHOICE Downlink RLC mode		AM RLC
- In-sequence delivery		TRUE
- Receiving window size		8
- Downlink RLC status info		
- Timer_status_prohibit		200
- Timer_EPC		200
- Missing PDU indicator		TRUE
- RB mapping info		
- Information for each multiplexing option		2 RBMuxOptions
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		Not Present
- CHOICE RLC size list		Configured
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		Not Present
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		7
- CHOICE RLC size list		Configured~~Explicit~~
~~- RLC size index~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
- MAC logical channel priority		6
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		Not Present~~6~~
~~RB information to be affected~~	~~A1, A2, A3, A4~~	~~(UM DCCH for RRC)~~
~~- RB identity~~		~~1~~
~~- RB mapping info~~		
~~- Information for each multiplexing option~~		
~~- RLC logical channel mapping indicator~~		~~Not Present~~
~~- Number of uplink RLC logical channels~~		~~1~~
~~- Uplink transport channel type~~		~~DCH~~

Information Element	Condition	Value/remark
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		1
RB information to be affected	A1, A2, A3, A4	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		2
RB information to be affected	A1, A2, A3, A4	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		3
RB information to be affected	A1, A2, A3, A4	(AM DCCH for NAS_DT Low priority)
- RB identity		4
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH

Information Element	Condition	Value/remark
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		4
RB information to be affected	A1, A4, A5, A6,A7,A8, A6	(UM DCCH for RRC)Not Present
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		1
- CHOICE RLC size list		ConfiguredExplicit
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		1
RB information to be affected	A5, A6	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		2
- CHOICE RLC size list		ConfiguredExplicit
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		2
RB information to be affected	A5, A6	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		3
- CHOICE RLC size list		ConfiguredExplicit
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present

Information Element	Condition	Value/remark
- Logical channel identity		3
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - UL Transport channel identity - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - DL DSCH Transport channel identity - Logical channel identity	A5, A6	(AM DCCH for NAS_DT Low priority) 4 Not Present 1 RACH Not Present 4 ConfiguredExplicit Reference to TS34.108 clause 6.10 Parameter Set 5 1 FACH Not Present Not Present 4
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity - Downlink RLC logical channel info	A5, A6	(TM BCCH for RRC) 6 1 FACH 5 Not Present
Downlink counter synchronisation info	A1, A4, A5, A6,A7,A8	Not Present
UL Transport channel information for all transport channels - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - TFC subset - UL DCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information - 2bit CTFC - Power offset information - CHOICE Gain Factors - Gain factor •c - Gain factor •d - Reference TFC ID	A1,A4,A7, A8, A2, A4	 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.)Not Present (This IE is repeated for TFC number.) Normal Complete reconfiguration Number of bits used must be enough to cover all combinations of CTFC from TS34.108 clause 6.10 Parameter Set. This IE is repeated for TFC numbers and reference to TS34.108 clause 6.10 Parameter SetRefer to TS34.108 clause 6.10 Parameter Set 0 Reference to TS34.108 clause 6.10 Parameter Set Computed Gain Factors(The last TFC is set to Signalled Gain Factors) TBD(Not Present if the CHOICE Gain Factors is set to Signalled Gain Factors) TBD(Not Present if the CHOICE Gain Factors is set to Signalled Gain Factors) 0

Information Element	Condition	Value/remark
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 2bit CTFC		1
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 2bit CTFC		2
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		3
- 2bit CTFC		2
- Power offset information		
- CHOICE Gain Factors		Signalled Gain Factor
- CHOICE mode		FDD
- Gain factor •c		0
- Gain factor •d		0
- Reference TFC ID		Not Present0
- CHOICE mode		FDD
- Power offset Pp-m		0dBNot Present
UL Transport channel information for all transport channels	A4	
- PRACH TFCS		Not Present
- CHOICE mode		FDD
- TFC subset		Not Present
- UL DCH TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Complete reconfiguration
- TFCS complete reconfigure information		
- CHOICE CTFC Size		4 bit CTFC
- CTFC information		
- 4bit CTFC		0
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		2
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		4
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		6

Information Element	Condition	Value/remark
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		8
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		1
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		3
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		5
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		7
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		9
- 4bit CTFC		2
- Power offset information		
- CHOICE Gain Factors		Signalled Gain Factor
- CHOICE mode		FDD
- Gain factor •c		0
- Gain factor •d		0
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset Pp-m		Not Present
UL Transport channel information for all transport channels	A3	
- Allowed Transport Format combination		0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)
- PRACH TFCS		Not Present
- CHOICE mode		FDD
- TFC subset		(This IE is repeated for TFC number.)
- UL-DCH TFCS		(This IE is repeated for TFC number.)
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Complete

Information Element	Condition	Value/remark
~~- TFCS complete reconfigure information~~ ~~- CHOICE CTFC Size~~ ~~- CTFC information~~ ~~- Power offset information~~		 ~~Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set~~ ~~Not Present~~
UL Transport channel information for all transport channels ~~- Allowed Transport Format combination~~ - PRACH TFCS - CHOICE mode - TFC subset - UL DCH TFCS	A5, A6	Not Present ~~0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)~~ ~~Not Present~~ ~~FDD~~ ~~(This IE is repeated for TFC number.)~~Not Present ~~Not Present~~
Deleted UL TrCH information	A1, ~~A2, A3,~~ A4, A5, A6,A7,A8	Not Present
~~Deleted UL TrCH information~~ ~~- Uplink transport channel type~~ ~~- UL Transport channel identity~~	~~A5~~	 ~~DCH~~ ~~5~~
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks ~~- Transmission Time Interval~~ ~~- Number of Transport blocks~~ - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A1~~, A2, A3, A4~~	 DCH 1 Dedicated transport channels ~~(This IE is repeated for TFI number)~~ Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.)~~2~~ Not Present Reference to TS34.108 clause 6.10 Parameter Set~~0~~ ~~Not Present~~ ~~1~~ All~~Explicit~~ Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list	A4,A7	2 TrCHs(DCH for DCCH and DCH for DTCH) DCH 5 Dedicated transport channels Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set All

Information Element	Condition	Value/remark
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		All
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information	A8	4 TrCHs(DCH for DCCH and 3DCHs for DTCH)
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		All
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- Uplink transport channel type		DCH
- UL Transport channel identity		1

Information Element	Condition	Value/remark
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		All
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- Uplink transport channel type		DCH
- UL Transport channel identity		2
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		All
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- Uplink transport channel type		DCH
- UL Transport channel identity		3
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		All
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set

Information Element	Condition	Value/remark
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information	A4	
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		
- RLC Size		336
- Number of TBs and TTI List		5
- Transmission Time Interval		Not Present
- Number of Transport blocks		0
- Transmission Time Interval		Not Present
- Number of Transport blocks		1
- Transmission Time Interval		Not Present
- Number of Transport blocks		2
- Transmission Time Interval		Not Present
- Number of Transport blocks		3
- Transmission Time Interval		Not Present
- Number of Transport blocks		4
- CHOICE Logical Channel list		All
- Semi-static Transport Format information		
- Transmission time interval		20
- Type of channel coding		Turbo
- Coding Rate		Not Present
- Rate matching attribute		150
- CRC size		16
- CHOICE mode		FDD
- CPCH set ID		Not Present
- Added or Reconfigured TrCH information for DRAC list		Not Present
Added or Reconfigured UL TrCH information	A1, A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set 144
- Number of TBs and TTI List		(This IE is repeated for TFI number.)2
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set 0
- Transmission Time Interval		Not Present
- Number of Transport blocks		1
- CHOICE Logical Channel list		AllExplicit
- Semi-static Transport Format information		
- Transmission time interval		40ms Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Convolutional Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		1/3Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		170Reference to TS34.108 clause 6.10 Parameter Set

Information Element	Condition	Value/remark
- CRC size		16Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC size - Number of TBs and TTI List - Transmission Time Interval - Number of transport blocks - CHOICE Logical Channel List - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A2	 DCH 2 Dedicated transport channels (This IE is repeated for TFI number) Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Not Present Reference to clause 6.10 Parameter Set Explicit Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC size - Number of TBs and TTI List - Transmission Time Interval - Number of transport blocks - CHOICE Logical Channel List - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A2	(This IE is needed for 12.2 kbps and 10.2 kbps) DCH 3 (This IE is repeated for TFI number) Dedicated transport channels Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Not Present Reference to clause 6.10 Parameter Set Explicit Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information	A5, A6	Not Present
CHOICE *mode* - CPCH set ID - Added or Reconfigured TrCH information for DRAC list DRAC static information	A1, A4, A5, A6,A7,A8	FDD Not Present Not Present Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE mode - CHOICE DL parameters - DL DCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information - Power offset information	A1,A7,A8, A4	 Not Present FDD ExplicitSameasUL (This IE is repeated for TFC number.) Normal Complete Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present
DL Transport channel information common for all transport channel	A4	

Information Element	Condition	Value/remark
- SCCPCH TFCS - CHOICE mode - CHOICE DL parameters - DL DCH TFCS - CHOICE TFCI Signalling - TFCI Field 1 Information - CHOICE TFCS representation - TFCS complete reconfigure - CHOICE CTFC Size - CTFC information - CTFC - Power offset information		Not Present FDD Explicit Normal Complete reconfiguration Number of bits used must be enough to cover all combinations of CTFC from clause TS34.108 clause 6.10 Parameter Set. This IE is repeated for TFC numbers and reference to TS34.108 clause 6.10 Reference to TS34.108 clause 6.10 Parameter Set Not Present
~~DL Transport channel information common for all transport channel~~ ~~- SCCPCH TFCS~~ ~~- CHOICE mode~~ ~~- CHOICE DL parameters~~ ~~- DL DCH TFCS~~ ~~- CHOICE TFCI signalling~~ ~~- TFCI Field 1 information~~ ~~- CHOICE TFCS representation~~ ~~- TFCS complete reconfigure~~ ~~- CHOICE CTFC Size~~ ~~- CTFC information~~ ~~- Power offset information~~ ~~- CHOICE Gain Factors~~ ~~- Gain factor ßc~~ ~~- Gain factor ßd~~ ~~- Reference TFC ID~~ ~~- Power offset Pp-m~~	~~A2, A3, A4~~	 ~~Not Present~~ ~~FDD~~ ~~Explicit~~ ~~(This IE is repeated for TFC number.)~~ ~~Normal~~ ~~Complete~~ ~~Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.~~ ~~Refer to clause 6.10 Parameter Set~~ ~~Signalled Gain Factor~~ ~~0~~ ~~0~~ ~~Not Present~~ ~~0dB~~
DL Transport channel information common for all transport channel - SCCPCH TFCS ~~- CHOICE TFCI signalling~~ ~~- TFCI Field 1 information~~ ~~- CHOICE TFCS representation~~ ~~- TFCS addition information~~ ~~- CHOICE CTFC Size~~ ~~- CTFC information~~ ~~- Power offset information~~ - CHOICE mode - CHOICE DL parameters	A5, A6	Not Present ~~(This IE is repeated for TFC number.)~~Not ~~Present~~ ~~Normal~~ ~~Addition~~ ~~Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.~~ ~~Refer to TS34.108 clause 6.10 Parameter Set~~ ~~FDD~~ ~~Not Present~~
Deleted DL TrCH information	A1, ~~A2, A3,~~ A4, A5, A6,A7,A8	Not Present
~~Deleted DL TrCH information~~ ~~- Downlink transport channel type~~ ~~- Transport channel identity~~	~~A5~~	 ~~DCH~~ ~~10~~
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - Uplink transport channel type	A1~~, A2~~A4	 DCH 6 Same as UL DCH

Information Element	Condition	Value/remark
- UL TrCH identity		1
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A4,A7	2 TrCHs(DCH for DCCH and DCH for DTCH)
- Downlink transport channel type		DCH
- DL Transport channel identity		10
- CHOICE DL parameters		Same as UL
- Uplink transport channel type		DCH
- UL TrCH identity		5
- DCH quality target		
- BLER Quality value		Not Present
- Transparent mode signalling info		Not Present
- Downlink transport channel type		DCH
- DL Transport channel identity		6
- CHOICE DL parameters		Explicit
- TFS		
- CHOICE Transport channel type		Dedicated transport channel
- Dynamic transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Dynamic transport format information		
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A8	4 TrCHs(DCH for DCCH and 3DCHs for DTCH)
- Downlink transport channel type		DCH
- DL Transport channel identity		10
- CHOICE DL parameters		Same as UL
- Uplink transport channel type		DCH
- UL TrCH identity		5
- DCH quality target		
- BLER Quality value		Not Present
- Transparent mode signalling info		Not Present
- Downlink transport channel type		DCH
- DL Transport channel identity		6
- CHOICE DL parameters		Explicit
- TFS		
- CHOICE Transport channel type		Dedicated transport channel
- Dynamic transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Dynamic transport format information		
- Transmission Time Interval		Not Present

Information Element	Condition	Value/remark
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
- Downlink transport channel type		DCH
- DL Transport channel identity		7
- CHOICE DL parameters		Explicit
- TFS		
- CHOICE Transport channel type		Dedicated transport channel
- Dynamic transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Dynamic transport format information		
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		
- BLER Quality value		Not Present
- Transparent mode signalling info		Not Present
- Downlink transport channel type		DCH
- DL Transport channel identity		8
- CHOICE DL parameters		Explicit
- TFS		
- CHOICE Transport channel type		Dedicated transport channel
- Dynamic transport format information		
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Dynamic transport format information		
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set

Information Element	Condition	Value/remark
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		
- BLER Quality value		Not Present
- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A5, A6	Not Present
~~Added or Reconfigured DL TrCH information~~	~~A1, A2, A3,~~ A4	~~If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).~~
~~- Downlink transport channel type~~		~~DCH~~
~~- DL Transport channel identity~~		~~10~~
~~- CHOICE DL parameters~~		~~Explicit~~SameAsUL
~~- Uplink transport channel type~~		~~DCH~~
~~- UL TrCH identity~~		~~5~~
~~- TFS~~		
~~- CHOICE Transport channel type~~		~~Dedicated transport channels~~
~~- Dynamic Transport format information~~		~~(This IE is repeated for TFI number)~~
~~- RLC Size~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- Number of TBs and TTI List~~		~~(This IE is repeated for TFI number.)~~
~~- Transmission Time Interval~~		~~Not Present~~
~~- Number of Transport blocks~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- CHOICE Logical Channel list~~		~~Explicit~~
~~- Semi-static Transport Format information~~		
~~- Transmission time interval~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- Type of channel coding~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- Coding Rate~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- Rate matching attribute~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- CRC size~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- DCH quality target~~		
~~- BLER Quality value~~		~~6.3~~
~~- Transparent mode signalling info~~		~~Not Present~~
~~Added or Reconfigured DL TrCH information~~	~~A2~~	
~~- Downlink transport channel type~~		~~DCH~~
~~- Transport channel identity~~		~~7~~
~~- CHOICE DL parameters~~		~~SameAsUL~~
~~- Uplink transport channel type~~		~~DCH~~
~~- UL TrCH identity~~		~~2~~
~~Added or Reconfigured DL TrCH information~~	~~A2~~	~~(This IE is needed for 12.2 kbps and 10.2 kbps)~~
~~- Downlink transport channel type~~		~~DCH~~
~~- Transport channel identity~~		~~8~~
~~- CHOICE DL parameters~~		~~SameAsUL~~
~~- Uplink transport channel type~~		~~DCH~~
~~- UL TrCH identity~~		~~3~~
~~- DCH quality target~~		
~~- BLER Quality value~~		~~6.3~~
~~- Transparent mode signalling info~~		~~Not Present~~
~~Added or Reconfigured DL TrCH information~~	~~A3, A4~~	
~~- Downlink transport channel type~~		~~DCH~~
~~- DL Transport channel identity~~		~~6~~

Information Element	Condition	Value/remark
~~- CHOICE DL parameters~~ ~~- TFS~~ ~~- CHOICE Transport channel type~~ ~~- Dynamic Transport format information~~ ~~- RLC Size~~ ~~- Number of TBs and TTI List~~ ~~- Transmission Time Interval~~ ~~- Number of Transport blocks~~ ~~- CHOICE Logical Channel list~~ ~~- Semi-static Transport Format information~~ ~~- Transmission time interval~~ ~~- Type of channel coding~~ ~~- Coding Rate~~ ~~- Rate matching attribute~~ ~~- CRC size~~ ~~- DCH quality target~~ ~~- BLER Quality value~~ ~~- Transparent mode signalling info~~		~~Explicit~~ ~~Dedicated transport channels~~ ~~(This IE is repeated for TFI number)~~ ~~Reference to TS34.108 clause 6.10 Parameter Set~~ ~~(This IE is repeated for TFI number.)~~ ~~Not Present~~ ~~Reference to TS34.108 clause 6.10 Parameter Set~~ ~~Explicit~~ ~~Reference to TS34.108 clause 6.10 Parameter Set~~ ~~Reference to TS34.108 clause 6.10 Parameter Set~~ ~~Reference to TS34.108 clause 6.10 Parameter Set~~ ~~Reference to TS34.108 clause 6.10 Parameter Set~~ ~~Reference to TS34.108 clause 6.10 Parameter Set~~ ~~6.3~~ ~~Not Present~~
Frequency info - UARFCN uplink (Nu) - UARFCN downlink (Nd)	A1, A4, A5, A6	 Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~ Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~
Maximum allowed UL TX power	A1, A4, A5, A6	33dBm
CHOICE channel requirement - Uplink DPCH power control info - DPCCH power offset - PC Preamble - SRB delay - Power Control Algorithm - TPC step size - Scrambling code type - Scrambling code number - Number of DPDCH - spreading factor - TFCI existence - Number of FBI bit - Puncturing Limit ~~- Puncturing Limit~~	A1, A4~~A3, A4~~ ~~A1~~ ~~A4~~	Uplink DPCH info -6dB 1 frame 7 frames Algorithm1 1dB Long 0 (0 to 16777215) Not Present(1) Reference to TS34.108 clause 6.10 Parameter Set~~SF is reference to TS34.108 clause 6.10 Parameter Set 16~~ Reference to TS34.108 clause 6.10 Parameter Set~~TRUE~~ Reference to TS34.108 clause 6.10 Parameter Set~~Not Present(0)~~ Reference to TS34.108 clause 6.10 Parameter Set~~0.88~~ ~~Reference to TS34.108 clause 6.10 Parameter Set 0.96~~
~~CHOICE channel requirement~~ ~~- Uplink DPCH power control info~~ ~~- DPCCH power offset~~ ~~- PC Preamble~~	~~A2~~	~~Uplink DPCH info~~ ~~-6dB~~ ~~1 frame~~

Information Element	Condition	Value/remark
~~- SRB delay~~ ~~- Power Control Algorithm~~ ~~- TPC step size~~ ~~- Scrambling code type~~ ~~- Scrambling code number~~ ~~- Number of DPDCH~~ ~~- spreading factor~~ ~~- TFCI existence~~ ~~- Number of FBI bit~~ ~~- Puncturing Limit~~		~~7 frames~~ ~~Algorithm1~~ ~~1dB~~ ~~Long~~ ~~0 (0 to 16777215)~~ ~~Not Present(1)~~ ~~SF is reference to clause 6.10 Parameter Set~~ ~~TRUE~~ ~~Not Present(0)~~ ~~Reference to clause 6.10 Parameter Set~~
CHOICE channel requirement	A5,A6	Not Present
CHOICE Mode - Downlink PDSCH information	A1, A4, A5, A6,A7,A8	FDD Not Present
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing indicator - CFN-targetSFN frame offset - Downlink DPCH power control information - DPC mode - CHOICE mode - Power offset $P_{Pilot-DPDCH}$ - DL rate matching restriction information - Spreading factor - Fixed or Flexible Position - TFCI existence - ~~Number of bits for Pilot bits(SF=128,256)~~CHOICE SF - CHOICE mode - DPCH compressed mode info ~~- TGPSI~~ ~~- TGPS Status Flag~~ ~~- TGCFN~~ ~~- Transmission gap pattern sequence configuration parameters~~ ~~- TGMP~~ ~~- TGPRC~~ ~~- TGSN~~ ~~- TGL1~~ ~~- TGL2~~ ~~- TGD~~ ~~- TGPL1~~ ~~- TGPL2~~ ~~- RPP~~ ~~- ITP~~ ~~- CHOICE UL/DL Mode~~ ~~- Downlink compressed mode method~~ ~~- Downlink frame type~~ ~~- DeltaSIR1~~ ~~- DeltaSIRafter1~~ ~~- DeltaSIR2~~ ~~- DeltaSIRafter2~~ ~~- N_Identify_abort~~ ~~- T_Reconfirm_abort~~ - TX Diversity mode	A1, A4,A7,A8 ~~A2, A3, A4~~	 Maintain Not Present 0 (single) FDD ~~TBD~~0 Not Present Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set ~~Flexible~~ Reference to TS34.108 clause 6.10 Parameter Set ~~TRUE~~ ~~Not Present~~Otherwise FDD Not Present ~~1~~ ~~Inactive~~ ~~(Current CFN + (256 – TTI/10msec)) mod 256~~ ~~FDD Measurement~~ ~~62~~ ~~8~~ ~~10~~ ~~5~~ ~~15~~ ~~35~~ ~~35~~ ~~Mode 1~~ ~~Mode 1~~ ~~DL~~ ~~SF/2~~ ~~A~~ ~~2.0~~ ~~1.0~~ ~~Not Present~~ ~~Not Present~~ ~~Not Present~~ ~~Not Present~~ None

Information Element	Condition	Value/remark
- SSDT information - Default DPCH Offset Value		Not Present 0Not Present
Downlink information common for all radio links	A5,A6	Not Present
Downlink information for each radio link list - Downlink information for each radio link ~~list~~ - Choice mode - Primary CPICH info - Primary scrambling code - PDSCH with SHO DCH info - PDSCH code mapping - Downlink DPCH info for each RL - Primary CPICH usage for channel estimation - DPCH frame offset ~~- Power offset $P_{Pilot-DPDCH}$~~ - Secondary CPICH info - DL channelisation code - Secondary scrambling code - Spreading factor - Code number - Scrambling code change - TPC combination index - SSDT Cell Identity - Closed loop timing adjustment mode - SCCPCH information for FACH	A1,A4,A7, A8 ~~A1, A2, A3, A4~~	 FDD 100 Not Present Not Present Primary CPICH may be used 0 chips ~~TBD~~ Not Present 1 Reference to TS34.108 clause 6.10 Parameter Set ~~SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)~~0 No change 0 Not Present~~-a~~ Not Present Not Present
Downlink information for each radio link list - Downlink information for each radio link - Choice mode - Primary CPICH info - Primary scrambling code - PDSCH with SHO DCH info - PDSCH code mapping - Downlink DPCH info for each RL - SCCPCH information for FACH	~~A5, A6~~A5 ~~A5~~	 FDD ~~Set to the default value of cell 1.~~ 100~~150~~ Not Present Not Present Not present Not Present
Downlink information for each radio link list - Downlink information for each radio link - Choice mode - Primary CPICH info - Primary scrambling code - PDSCH with SHO DCH info - PDSCH code mapping - Downlink DPCH info for each RL - SCCPCH information for FACH	A6 ~~A6~~	 FDD 150 Not Present Not Present Not present Not Present

Condition	Explanation
A1	This IE need for “Non speech ~~in CS”~~ from CELL_DCH to CELL_DCH in CS”
A2 is defined in TS34.108 clause 9.	This IE need for “Speech ~~in CS”~~ from CELL_DCH to CELL_DCH in CS”
A3 is defined in TS34.108 clause 9.	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”
A7	This IE need for “Non speech from CELL_FACH to CELL_DCH in CS”
A8	This IE need for “Speech from CELL_FACH to CELL_DCH in CS”

~~Note: The radio bearer configurations used here are served as example only, test operator can choose to use other radio bearer configurations.~~

Contents of RADIO BEARER SETUP FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identitifer	Checked to see if it is set to identical value of the same IE in the downlink RADIO BEARER SETUP message.
Integrity check info	The presence if this IE is dependent on IXIT statements in TS 34.123-2. if integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Checked to see if it meets test requirement
Radio bearers for which reconfiguration would have succeeded	Not checked

Contents of RADIO BEARER RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type	A1,A2,A3, A4,A5,A6	
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient	A1,A2,A3, A4,A5,A6	Not Present
CN information info		Not Present
URA identity		Not Present
RAB information to reconfigure list		Not Present
RB information to reconfigure list	A1~~, A2, A3~~	TS25.331 specifies that "Although this IE is not always required, need is MP to align with ASN.1".
- RB information to reconfigure		(UM DCCH for RRC)
- RB identity		1
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- PDCP SN info		Not Present

Information Element	Condition	Value/remark
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)
- RB identity		3
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(TM DTCH)
- RB identity		10
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
RB information to reconfigure list	A2	TS25.331 specifies that “Although this IE is not always required, need is MP to align with ASN.1”.
- RB information to reconfigure	~~A2~~	(UM DCCH for RRC)
- RB identity		1
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)
- RB identity		3
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(TM DTCH)
- RB identity		10
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present

Information Element	Condition	Value/remark
- RB stop/continue		Not Present
- RB information to reconfigure		(TM DTCH)
- RB identity		11
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(TM DTCH) (This IE is needed for 12.2 kbps and 10.2 kbps)
- RB identity		12
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
RB information to reconfigure list	A3,A4,A5, A6	TS25.331 specifies that "Although this IE is not always required, need is MP to align with ASN.1".
- RB information to reconfigure	~~A3, A6~~	(UM DCCH for RRC)
- RB identity		1
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)
- RB identity		3
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DTCH)
- RB identity		20
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
~~RB information to reconfigure list~~	~~A4~~	
~~- RB information to reconfigure~~		~~(UM DCCH for RRC)~~
~~- RB identity~~		~~1~~
~~- PDCP info~~		~~Not Present~~
~~- RLC info~~		~~Not Present~~
~~- RB mapping info~~		

Information Element	Condition	Value/remark
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		AllConfigured
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		1
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		5
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		2
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		2
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)
- RB identity		3
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		3
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		3
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present

Information Element	Condition	Value/remark
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		4
- RB information to reconfigure		(AM DTCH)
- RB identity		20
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		Not Present7
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		Not Present7
- RB stop/continue		Not Present
RB information to reconfigure list	A5,A6	
- RB information to reconfigure		(UM DCCH for RRC)
- RB identity		1
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		1
- CHOICE RLC size list		ConfiguredExplicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		1
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		

Information Element	Condition	Value/remark
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		2
- CHOICE RLC size list		ConfiguredExplicit List
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		2
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)
- RB identity		3
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		3
- CHOICE RLC size list		ConfiguredExplicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		3
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		4
- CHOICE RLC size list		ConfiguredExplicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		5
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		4
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DTCH)

Information Element	Condition	Value/remark
~~- RB identity~~		~~20~~
~~- PDCP info~~		~~Not Present~~
~~- RLC info~~		~~Not Present~~
~~- RB mapping info~~		
~~- Information for each multiplexing option~~		
~~- RLC logical channel mapping indicator~~		~~Not Present~~
~~- Number of uplink RLC logical channels~~		~~1~~
~~- Uplink transport channel type~~		~~RACH~~
~~- UL Transport channel identity~~		~~Not Present~~
~~- Logical channel identity~~		~~7~~
~~- CHOICE RLC size list~~		~~Configured~~~~Explicit list~~
~~- RLC size index~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- MAC logical channel priority~~		~~6~~
~~- Downlink RLC logical channel info~~		
~~- Number of downlink RLC logical channels~~		~~1~~
~~- Downlink transport channel type~~		~~FACH~~
~~- DL DCH Transport channel identity~~		~~Not Present~~
~~- DL DSCH Transport channel identity~~		~~Not Present~~
~~- Logical channel identity~~		~~Not Present~~~~6~~
~~- RB stop/continue~~		~~Not Present~~
~~- RB information to reconfigure~~		~~(TM BCCH for RRC)~~
~~- RB identity~~		~~5~~
~~- PDCP info~~		~~Not Present~~
~~- RLC info~~		
~~- CHOICE Uplink RLC mode~~		~~Not Present~~
~~- CHOICE Downlink RLC mode~~		~~TM RLC~~
~~- Segmentation Indication~~		~~TRUE~~
~~- RB mapping info~~		
~~- Information for each multiplexing option~~		
~~- Downlink RLC logical channel info~~		
~~- Number of downlink RLC logical channels~~		~~1~~
~~- Downlink transport channel type~~		~~FACH~~
~~- DL DCH Transport channel identity~~		~~Not Present~~
~~- DL DSCH Transport channel identity~~		~~Not Present~~
~~- Logical channel identity~~		~~5~~
~~- RB stop/continue~~		~~Not Present~~
RB information to be affected	A1, A2, A3,A4,A5, A6	~~(UM DCCH for RRC)~~ Not Present
~~- RB identity~~		~~1~~
~~- RB mapping info~~		
~~- Information for each multiplexing option~~		
~~- RLC logical channel mapping indicator~~		~~Not Present~~
~~- Number of uplink RLC logical channels~~		~~1~~
~~- Uplink transport channel type~~		~~DCH~~
~~- UL Transport channel identity~~		~~5~~
~~- Logical channel identity~~		~~1~~
~~- CHOICE RLC size list~~		~~All~~
~~- MAC logical channel priority~~		~~1~~
~~- Number of downlink RLC logical channels~~		~~1~~
~~- Downlink transport channel type~~		~~DCH~~
~~- DL DCH Transport channel identity~~		~~10~~
~~- DL DSCH Transport channel identity~~		~~Not Present~~
~~- Logical channel identity~~		~~1~~
~~RB information to be affected~~	~~A1, A2, A3~~	~~(AM DCCH for RRC)~~
~~- RB identity~~		~~2~~
~~- RB mapping info~~		
~~- Information for each multiplexing option~~		
~~- RLC logical channel mapping indicator~~		~~Not Present~~
~~- Number of uplink RLC logical channels~~		~~1~~

Information Element	Condition	Value/remark
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		10
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		1
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		2
RB information to be affected	A1, A2, A3	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		All
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		3
RB information to be affected	A1, A2, A3	(AM DCCH for NAS_DT Low priority)
- RB identity		4
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		All
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		4
RB information to be affected	A1, A2, A3	(TM DTCH)
- RB identity		10
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- DL DSCH Transport channel identity		Not Present

Information Element	Condition	Value/remark
- Logical channel identity		7
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - UL Transport channel identity - Logical channel identity - CHOICE RLC size list - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - DL DSCH Transport channel identity - Logical channel identity	A2	(DTCH TM) 11 Not Present 1 DCH 2 8 All 1 1 DCH 7 Not Present 8
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - UL Transport channel identity - Logical channel identity - CHOICE RLC size list - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - DL DSCH Transport channel identity - Logical channel identity	A2	(This IE is needed for 12.2 kbps and 10.2 kbps) 12 Not Present 1 DCH 3 9 All 1 1 DCH 8 Not Present 9
UL Transport channel information for all transport channels	A1, A2, A3, A4,A5,A6	Not Present
UL Transport channel information for all transport channels - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - TFC subset - UL DCH TFCS - Normal - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE Gain Factor - Gain factor •c - Gain factor •d - Reference TFC ID - Power offset Pp-m	A1, A2, A3, A4	 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) (This IE is repeated for TFC number.) Addition Refer to TS34.108 clause 6.10 Parameter Set Signalled Gain Factor 0 0 Not Present 0dB
UL Transport channel information for all transport	A5, A6	

Information Element	Condition	Value/remark
channels - Allowed Transport Format combination - PRACH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE mode - TFC subset - UL DCH TFCS		 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present Normal Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present FDD Not Present(This IE is repeated for TFC number.) Not Present
Deleted UL TrCH information	A1, A2, A3, A4, A5,A6	Not Present
Deleted UL TrCH information - Uplink transport channel type - Transport channel identity - Uplink transport channel type - Transport channel identity	A5	 DCH 1 DCH 5
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A1, A2, A3, A4, A5,A6	Not Present DCH 5 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set Explicit Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list	A4	 DCH 1 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set Explicit

Information Element	Condition	Value/remark
- Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size		 Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - Transmission Time Interval - Number of Transport blocks - Transmission Time Interval - Number of Transport blocks - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A4	 DCH 1 Dedicated transport channels 336 5 Not Present 0 Not Present 1 Not Present 2 Not Present 3 Not Present 4 All 20 Turbo Not Present 150 16
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A4	 DCH 5 Dedicated transport channels 144 2 Not Present 0 Not Present 1 All 40ms Convolutional 1/3 170 16
CHOICE mode - CPCH set ID - Added or Reconfigured TrCH information for DRAC list	A1,A2,A3, A4,A5,A6	FDD Not Present Not Present
DRAC static information		Not Present

Information Element	Condition	Value/remark
DL Transport channel information common for all transport channel ~~- SCCPCH TFCS~~ ~~- CHOICE mode~~ ~~- CHOICE DL parameters~~ ~~- DL DCH TFCS~~ ~~- Normal~~ ~~- TFCI Field 1 information~~ ~~- CHOICE TFCS representation~~ ~~- TFCS addition information~~ ~~- CHOICE CTFC Size~~ ~~- CTFC information~~ ~~- Power offset information~~ ~~- CHOICE Gain Factors~~ ~~- Gain factor •c~~ ~~- Gain factor •d~~ ~~- Reference TFC ID~~ ~~- Power offset Pp-m~~	A1, A2, A3, A4,A5, A6	Not Present ~~Not Present~~ ~~FDD~~ ~~Explicit~~ ~~(This IE is repeated for TFC number.)~~ ~~Addition~~ ~~Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set~~ ~~Signalled Gain Factor~~ ~~0~~ ~~0~~ ~~Not Present~~ ~~0dB~~
~~DL Transport channel information common for all transport channel~~ ~~- SCCPCH TFCS~~ ~~- CHOICE mode~~ ~~- CHOICE DL parameters~~ ~~- DL DCH TFCS~~ ~~- Normal~~ ~~- TFCI Field 1 information~~ ~~- CHOICE TFCS representation~~ ~~- TFCS addition information~~ ~~- CHOICE CTFC Size~~ ~~- CTFC information~~ ~~- Power offset information~~	~~A2, A4~~	 ~~Not Present~~ ~~FDD~~ ~~ExplicitSameAsUL~~ ~~(This IE is repeated for TFC number.)~~ ~~Addition~~ ~~Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set~~ ~~Not Present~~
~~DL Transport channel information common for all transport channel~~ ~~- SCCPCH TFCS~~ ~~- CHOICE TFCI signalling~~ ~~- TFCI Field 1 information~~ ~~- CHOICE TFCS representation~~ ~~- TFCS addition information~~ ~~- CHOICE CTFC Size~~ ~~- CTFC information~~ ~~- Power offset information~~ ~~- CHOICE mode~~ ~~- CHOICE DL parameters~~	~~A5, A6~~	 ~~(This IE is repeated for TFC number.)~~ ~~Normal~~ ~~Addition~~ ~~Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set~~ ~~Not Present~~ ~~FDD~~ ~~Not Present~~
Deleted DL TrCH information	A1, A2, A3, A4, A5,A6	Not Present
~~Deleted DL TrCH information~~ ~~- Downlink transport channel type~~ ~~- Transport channel identity~~ ~~- Downlink transport channel type~~ ~~- Transport channel identity~~	~~A5~~	 ~~DCH~~ ~~6~~ ~~DCH~~ ~~10~~
Added or Reconfigured DL TrCH information ~~- Downlink transport channel type~~ ~~- Transport channel identity~~ ~~- CHOICE DL parameters~~ ~~- Uplink transport channel type~~ ~~- UL TrCH Identity~~	A1, A2, A3, A4,A5, A6	Not Present ~~DCH~~ ~~10~~ ~~Same as UL~~ ~~DCH~~ ~~5~~

Information Element	Condition	Value/remark
- DCH quality target		
- BLER Quality value		6.3
- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A2, A3, A4	
- Downlink transport channel type		DCH
- DL Transport channel identity		10
- CHOICE DL parameters		ExplicitSameAsUL
- Uplink transport channel type		DCH
- UL TrCH Identity		5
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		Explicit
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		
- BLER Quality value		6.3
- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A4	
- Downlink transport channel type		DCH
- DL Transport channel identity		6
- CHOICE DL parameters		IndependentSameAsUL
- Uplink transport channel type		DCH
- UL TrCH Identity		1
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		

Information Element	Condition	Value/remark
~~- BLER Quality value~~ ~~- Transparent mode signalling info~~		~~6.3~~ ~~Not Present~~
Frequency info - UARFCN uplink (Nu) - UARFCN downlink (Nd)	A1,A2,A3, A4,A5,A6	 Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~ Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~
Maximum allowed UL TX power	A1,A2,A3, A4,A5,A6	33dBm
CHOICE channel requirement -Uplink DPCH power control info - DPCCH power offset - PC Preamble - SRB delay - Power Control Algorithm - TPC step size - Scrambling code type - Scrambling code number - Number of DPDCH - spreading factor - TFCI existence - Number of FBI bit - Puncturing Limit	A1, A2, A3, A4	Uplink DPCH info -6dB 1 frame 7 frames Algorithm1 1dB Long 0 (0 to 16777215) Not Present(1) Reference to TS34.108 clause 6.10 Parameter Set ~~SF is reference to TS34.108 clause 6.10 Parameter Set~~ ~~16~~ Reference to TS34.108 clause 6.10 Parameter Set ~~TRUE~~ Reference to TS34.108 clause 6.10 Parameter Set ~~Not Present(0)~~ Reference to TS34.108 clause 6.10 Parameter Set ~~Reference to TS34.108 clause 6.10 Parameter Set~~ ~~0.96~~
CHOICE channel requirement	~~A1, A2, A3,~~ A5, A6	Not Present
CHOICE Mode - Downlink PDSCH information	A1,A2,A3, A4,A5,A6	FDD Not Present
Downlink information common for all radio links	~~A1, A2, A3,~~ A5, A6	Not Present
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing indicator - CFN-targetSFN frame offset - Downlink DPCH power control information - DPC mode - CHOICE mode - Power offset $P_{Pilot-DPDCH}$ - DL rate matching restriction information - Spreading factor - Fixed or Flexible Position - TFCI existence - CHOICE SF~~Number of bits for Pilot bits(SF=128,256)~~ - DPCH compressed mode info	A1, A2, A3, A4	 Maintain Not Present 0 (single) FDD ~~TBD~~0 Not Present Reference to TS34.108 clause 6.10 Parameter Set ~~32~~ Reference to TS34.108 clause 6.10 Parameter Set ~~Flexible~~ Reference to TS34.108 clause 6.10 Parameter Set ~~TRUE~~ ~~Not Present~~Otherwise Not Present

Information Element	Condition	Value/remark
- TGPSI		1
- TGPS Status Flag		Inactive
- TGCFN		(Current CFN + (256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters		
- TGMP		FDD Measurement
- TGPRC		62
- TGSN		8
- TGL1		10
- TGL2		5
- TGD		15
- TGPL1		35
- TGPL2		35
- RPP		Mode 1
- ITP		Mode 1
- CHOICE UL/DL Mode		DL
- Downlink compressed mode method		SF/2
- Downlink frame type		A
- DeltaSIR1		2.0
- DeltaSIRafter1		1.0
- DeltaSIR2		Not Present
- DeltaSIRafter2		Not Present
- N_Identify_abort		Not Present
- T_Reconfirm_abort		Not Present
- TX Diversity mode		None
- SSDT information		Not Present
- Default DPCH Offset Value		0Not Present
Downlink information per radio link list	A1, A2, A3, A4	
-Downlink information for each radio link	A1, A2, A3, A4	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- Secondary scrambling code		
- channelisation code		
- DL channelisation code		
- Secondary scrambling code		12
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)0
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		-aNot Present
- Closed loop timing adjustment mode		Not Present
- SCCPCH information for FACH		Not Present
- Downlink information for each radio link	A1, A4	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		

Information Element	Condition	Value/remark
~~- Primary CPICH usage for channel estimation~~		~~Primary CPICH may be used~~
~~- DPCH frame offset~~		~~0 chips~~
~~- Secondary CPICH info~~		~~Not Present~~
~~- DL channelisation code~~		
~~- Secondary scrambling code~~		~~2~~
~~- Spreading factor~~		~~32~~
~~- Code number~~		~~0~~
~~- Scrambling code change~~		~~No change~~
~~- TPC combination index~~		~~0~~
~~- SSDT Cell Identity~~		~~Not Present~~
~~- Closed loop timing adjustment mode~~		~~Not Present~~
~~- SCCPCH information for FACH~~		~~Not Present~~
~~- Downlink information for each radio link~~	~~A3~~	
~~- Choice mode~~		~~FDD~~
~~- Primary CPICH info~~		
~~- Primary scrambling code~~		~~100~~
~~- PDSCH with SHO DCH info~~		~~Not Present~~
~~- PDSCH code mapping~~		~~Not Present~~
~~- Downlink DPCH info for each RL~~		
~~- Primary CPICH usage for channel estimation~~		~~Primary CPICH may be used~~
~~- DPCH frame offset~~		~~0 chips~~
~~- Secondary CPICH info~~		~~Not Present~~
~~- DL channelisation code~~		
~~- Secondary scrambling code~~		~~2~~
~~- Spreading factor~~		~~8~~
~~- Code number~~		~~0~~
~~- Scrambling code change~~		~~No change~~
~~- TPC combination index~~		~~0~~
~~- SSDT Cell Identity~~		~~Not Present~~
~~- Closed loop timing adjustment mode~~		~~Not Present~~
~~- SCCPCH information for FACH~~		~~Not Present~~
- Downlink information for each radio link	A5~~, A6~~	
- Choice mode		FDD
- Primary CPICH info		~~Set to the default value of cell 1.~~
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- SCCPCH Information for FACH		Not Present
- Downlink information for each radio link	A6	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		150
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not Present
- Secondary CCPCH info		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “~~6426~~Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

~~Note: The radio bearer configurations used here are served as example only, test operator can choose to use other radio bearer configurations~~.

Contents of RADIO BEARER RECONFIGURATION FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identitifer	Checked to see if it is set to identical value of the same IE in the downlink RADIO BEARER RECONFIGURATION message.
Integrity check info	The presence if this IE is dependent on IXIT statements in TS 34.123-2. if integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Checked to see if it meets test requirement
Radio bearers for which reconfiguration would have succeeded List	Not checked

Contents of RADIO BEARER RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink RADIO BEARER RECONFIGURATION COMPLETE message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
CHOICE mode	FDD
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM and (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
~~CHOICE mode~~	~~FDD~~
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of RADIO BEARER RELEASE message: AM or UM (The others of speech in CS)

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC State indicator	CELL_DCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	Not Present
RAB information to reconfigure list	Not Present
RB information to release	
- RB identity	10
RB information to be affected	(UM DCCH for RRC)
- RB identity	1
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	1
- CHOICE RLC size list	All
- MAC logical channel priority	1
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	1
RB information to be affected	(AM DCCH for RRC)
- RB identity	2
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	2
- CHOICE RLC size list	All
- MAC logical channel priority	2
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	2
RB information to be affected	(AM DCCH for NAS_DT High priority)
- RB identity	3
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present

	Information Element	Value/remark
	- Number of uplink RLC logical channels	1
	- Uplink transport channel type	DCH
	- UL Transport channel identity	5
	- Logical channel identity	3
	- CHOICE RLC size list	All
	- MAC logical channel priority	3
	- Downlink RLC logical channel info	
	- Number of downlink RLC logical channels	1
	- Downlink transport channel type	DCH
	- DL DCH Transport channel identity	10
	- DL DSCH Transport channel identity	Not Present
	- Logical channel identity	3
RB information to be affected		(AM DCCH for NAS_DT Low priority)
	- RB identity	4
	- RB mapping info	
	- RLC logical channel mapping indicator	Not Present
	- Information for each multiplexing option	
	- Number of uplink RLC logical channels	1
	- Uplink transport channel type	DCH
	- UL Transport channel identity	5
	- Logical channel identity	4
	- CHOICE RLC size list	All
	- MAC logical channel priority	4
	- Downlink RLC logical channel info	
	- Number of downlink RLC logical channels	1
	- Downlink transport channel type	DCH
	- DL DCH Transport channel identity	10
	- DL DSCH Transport channel identity	Not Present
	- Logical channel identity	4
UL Transport channel information for all transport channels		
	- Allowed Transport Format combination	0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)
	- PRACH TFCS	Not Present
	- CHOICE mode	FDD
	- TFC subset	(This IE is repeated for TFC number.)
	- UL DCH TFCS	(This IE is repeated for TFC number.)
	- Normal	
	- TFCI Field 1 information	
	- CHOICE CTFC representation	Addition
	- TFCS addition information	
	- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
	- CTFC information	Refer to TS34.108 clause 6.10 Parameter Set
	- Power offset information	
	- CHOICE Gain Factor	Signalled Gain Factor
	- Gain factor •c	0
	- Gain factor •d	0
	- Reference TFC ID	Not Present
	- Power offset Pp-m	0dB
Deleted UL TrCH Information		
	- Transport channel identity	1
Added or Reconfigured UL TrCH information		If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
	- Uplink transport channel type	DCH
	- UL Transport channel identity	5
	- TFS	
	- CHOICE Transport channel type	Dedicated transport channels
	- Dynamic Transport format information	(This IE is repeated for TFI number)
	- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
	- Number of TBs and TTI List	(This IE is repeated for TFI number.)

	Information Element	Value/remark
	- Transmission Time Interval	Not Present
	- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
	- CHOICE Logical Channel list	Explicit
	- Semi-static Transport Format information	
	- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
	- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
	- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
	- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
	- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
CPCH set ID		Not Present
DRAC static information		Not Present
DL Transport channel information common for all transport channel		
	- SCCPCH TFCS	Not Present
	- CHOICE mode	FDD
	- CHOICE DL parameters	Explicit
	- DL DCH TFCS	(This IE is repeated for TFC number.)
	- Normal	
	- TFCI Field 1 information	
	- CHOICE CTFC representation	Addition
	- TFCS addition information	
	- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
	- CTFC information	Refer to TS34.108 clause 6.10 Parameter Set
	- Power offset information	Not Present
Deleted DL TrCH Information		
	- Transport channel identity	6
Added or Reconfigured DL TrCH information		If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
	- Downlink transport channel type	DCH
	- DL Transport channel identity	10
	- CHOICE DL parameters	Explicit
	- TFS	
	- CHOICE Transport channel type	Dedicated transport channels
	- Dynamic Transport format information	(This IE is repeated for TFI number)
	- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
	- Number of TBs and TTI List	(This IE is repeated for TFI number.)
	- Transmission Time Interval	Not Present
	- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
	- CHOICE Logical Channel list	Explicit
	- Semi-static Transport Format information	
	- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
	- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
	- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
	- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
	- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
	- DCH quality target	
	- BLER Quality value	-6.3
	- Transparent mode signalling info	Not Present
Frequency info		
	- UARFCN uplink(Nu)	Reference to TS34.108 clause 6.10 Parameter Set
	- UARFCN downlink(Nd)	Reference to TS34.108 clause 6.10 Parameter Set
Maximum allowed UL TX power		33dBm
Uplink DPCH info		
	- Uplink DPCH power control info	
	- DPCCH power offset	-6dB
	- PC Preamble	1 frame
	- SRB delay	7 frames
	- Power Control Algorithm	Algorithm1
	- TPC step size	1dB
	- Scrambling code type	Long

	Information Element	Value/remark
	- Scrambling code number	0 (0 to 16777215)
	- Number of DPDCH	Not Present(1)
	- spreading factor	SF is reference to TS34.108 clause 6.10 Parameter Set
	- TFCI existence	TRUE
	- Number of FBI bit	Not Present(0)
	- Puncturing Limit	Reference to TS34.108 clause 6.10 Parameter Set
	CHOICE Mode	FDD
	- Downlink PDSCH information	Not Present
	Downlink information common for all radio links	
	- Downlink DPCH info common for all RL	
	- Timing indicator	Maintain
	- CFN-targetSFN frame offset	Not Present
	- Downlink DPCH power control information	
	- DPC mode	0 (single)
	- CHOICE mode	FDD
	- Power offset $P_{Pilot-DPDCH}$	TBD
	- DL rate matching restriction information	Not Present
	- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
	- Fixed or Flexible Position	N/A
	- TFCI existence	FALSE
	- Number of bits for Pilot bits(SF=128,256)	Reference to TS34.108 clause 6.10 Parameter Set
	- DPCH compressed mode info	
	- TGPSI	1
	- TGPS Status Flag	inactive
	- TGCFN	(Current CFN + (256 – TTI/10msec)) mod 256
	- Transmission gap pattern sequence configuration parameters	
	- TGMP	FDD Measurement
	- TGPRC	62
	- TGSN	8
	- TGL1	10
	- TGL2	5
	- TGD	15
	- TGPL1	35
	- TGPL2	35
	- RPP	Mode 1
	- ITP	Mode 1
	- CHOICE UL/DL Mode	DL
	- Downlink compressed mode method	SF/2
	- Downlink frame type	A
	- DeltaSIR1	2.0
	- DeltaSIRafter1	1.0
	- DeltaSIR2	Not Present
	- DeltaSIRafter2	Not Present
	- N_Identify_abort	Not Present
	- T_Reconfirm_abort	Not Present
	- TX Diversity mode	None
	- SSDT information	Not Present
	- Default DPCH Offset Value	0
	Downlink information for each radio link list	
	- Downlink information for each radio link	
	- CHOICE mode	FDD
	- Primary CPICH info	
	- Primary scrambling code	100
	- PDSCH with SHO DCH info	Not Present
	- PDSCH code mapping	Not Present
	- Downlink DPCH info for each RL	
	- Primary CPICH usage for channel estimation	Primary CPICH may be used
	- DPCH frame offset	0 chips
	- Power offset $P_{Pilot-DPDCH}$	TBD
	- Secondary CPICH info	Not Present

	Information Element	Value/remark
	- DL channelisation code	
	- Secondary scrambling code	1
	- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
	- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
	- Scrambling code change	No change
	- TPC combination index	0
	- SSDT Cell Identity	-a
	- Closed loop timing adjustment mode	Not Present
	- SCCPCH information for FACH	Not Present
	- References to system information blocks	Not Present

Contents of RADIO BEARER RELEASE message: AM or UM

Information Element		Value/remark
Message Type	A1,A2,A3,A4,A5,A6	
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1,A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient	A1,A2,A3,A4,A5,A6	Not Present
CN information info		Not Present
Signalling Connection release indication		Not Present
URA identity		Not Present
RAB information to reconfigure list		Not Present
RB information to release	A1,A2	
- RB identity		10
RB information to release	A2	
- RB identity		11
RB information to release	A2	
- RB identity		12
RB information to release	A3, A4, A5, A6	
- RB identity		20
~~RB information to release~~	~~A4~~	
~~- RB identity~~		~~6~~
~~RB information to release~~	~~A4~~	
~~- RB identity~~		~~7~~
RB information to be affected	A1,A2, A3,A4,A5, A6	Not Present
~~RB information to be affected~~	~~A2, A3,~~ A4	~~(UM DCCH for RRC)~~
~~- RB identity~~		~~1~~
~~- RB mapping info~~		
~~- Information for each multiplexing option~~		
~~- RLC logical channel mapping indicator~~		~~Not Present~~
~~- Number of uplink RLC logical channels~~		~~1~~
~~- Uplink transport channel type~~		~~DCH~~
~~- UL Transport channel identity~~		~~5~~
~~- Logical channel identity~~		~~1~~
~~- CHOICE RLC size list~~		~~All~~Configured
~~- MAC logical channel priority~~		~~1~~
~~- Downlink RLC logical channel info~~		
~~- Number of downlink RLC logical channels~~		~~1~~
~~- Downlink transport channel type~~		~~DCH~~
~~- DL DCH Transport channel identity~~		~~10~~
~~- DL DSCH Transport channel identity~~		~~Not Present~~
~~- Logical channel identity~~		~~1~~
~~RB information to be affected~~	~~A2, A3,~~ A4	~~(AM DCCH for RRC)~~

Information Element		Value/remark
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		2
RB information to be affected	A2, A3, A4	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		3
RB information to be affected	A2, A3, A4	(AM DCCH for NAS_DT Low priority)
- RB identity		4
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		ConfiguredAll
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		4
RB information to be affected	A5, A6	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		1
- CHOICE RLC size list		ConfiguredExplicit list
- RLC size index		Reference to TS34.108 clause 6.10

Information Element		Value/remark
		Parameter Set
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		1
RB information to be affected	A5, A6	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		2
- CHOICE RLC size list		ConfiguredExplicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		2
RB information to be affected	A5, A6	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		3
- CHOICE RLC size list		ConfiguredExplicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- DL DCH Transport channel identity		Not Present
- DL DSCH Transport channel identity		Not Present
- Logical channel identity		3
RB information to be affected	A5, A6	(AM DCCH for NAS_DT Low priority)
- RB identity		4
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- UL Transport channel identity		Not Present
- Logical channel identity		4
- CHOICE RLC size list		ConfiguredExplicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		5
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1

Information Element		Value/remark
- Downlink transport channel type - DL Transport channel identity - DL DCH Transport channel identity - DL DSCH Transport channel identity - Logical channel identity		FACH 1 Not Present Not Present 4
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(TM BCCH for RRC) 6 1 FACH 5
Downlink counter synchronisation info	A1,A2,A3,A4,A5,A6	Not Present
UL Transport channel information for all transport channels - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - TFC subset - UL DCH TFCS - Normal - TFCI Field 1 information - CHOICE CTFC representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE Gain Factor - Gain factor •c - Gain factor •d - Reference TFC ID - Power offset Pp-m	A1,A2, A4A3, A4,A5, A6	Not Present 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) (This IE is repeated for TFC number.) Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Signalled Gain Factor 0 0 Not Present 0dB
UL Transport channel information for all transport channels - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - TFC subset - UL DCH TFCS - Normal - TFCI Field 1 information - CHOICE CTFC representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information	A3	 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) (This IE is repeated for TFC number.) Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present
UL Transport channel information for all transport channels - PRACH TFCS - CHOICE mode - TFC subset - UL DCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information	A4	 Not Present FDD Not Present Normal

Information Element		Value/remark
- CHOICE TFCS representation		Complete reconfiguration
- TFCS complete reconfigure information		
- CHOICE CTFC Size		4 bit CTFC
- CTFC information		
- 4bit CTFC		0
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		2
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		4
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		6
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		8
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		1
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		3
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		5
- Power offset information		
- CHOICE Gain Factors		Computed Gain Factors
- Reference TFC ID		0
- CHOICE mode		FDD
- Power offset P p-m		Not Present
- CTFC information		
- 4bit CTFC		7

Information Element		Value/remark
- Power offset information - CHOICE Gain Factors - Reference TFC ID - CHOICE mode - Power offset P p-m - CTFC information - 4bit CTFC - Power offset information - CHOICE Gain Factors - CHOICE mode - Gain factor •c - Gain factor •d - Reference TFC ID - CHOICE mode - Power offset Pp-m		Computed Gain Factors 0 FDD Not Present 9 2 Signalled Gain Factor FDD 0 0 0 FDD Not Present
UL Transport channel information for all transport channels - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - TFC subset - UL DCH TFCS	A5, A6	 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) Not Present
Deleted UL TrCH Information - Uplink transport channel type - Transport channel identity	A1,A2, A3, A54	 DCH 1
Deleted UL TrCH Information - Uplink transport channel type - Transport channel identity	A2	 DCH 2
Deleted UL TrCH Information - Uplink transport channel type - Transport channel identity	A2	 DCH 3
Deleted UL TrCH Information - Uplink transport channel type - Transport channel identity	A3A5,A6A6	Not Present e DCH 1
Added or Reconfigured UL TrCH information	A1,A2, A3,A4 A5, A6	Not Present
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate	A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.). DCH 5 Dedicated transport channels (This IE is repeated for TFI number) 144Reference to TS34.108 clause 6.10 Parameter Set 2(This IE is repeated for TFI number.) Not PresentNot Present 0Reference to TS34.108 clause 6.10 Parameter Set Not Present 1 AllExplicit 40ms Reference to TS34.108 clause 6.10 Parameter Set Convolutional Reference to TS34.108 clause 6.10 Parameter Set 1/3Reference to TS34.108 clause 6.10

Information Element		Value/remark
- Rate matching attribute		Parameter Set 170Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		16Reference to TS34.108 clause 6.10 Parameter Set
CHOICE mode		FDD
- CPCH set ID		Not Present
- DRAC static information		Not Present
DL Transport channel information common for all transport channel	A2, A3, A5, A6	Not Present
DL Transport channel information common for all transport channel	A2, A3, A4	
- SCCPCH TFCS		Not Present
- CHOICE mode		FDD
- CHOICE DL parameters		ExplicitSameAsUL
- DL DCH TFCS		(This IE is repeated for TFC number.)
- Normal		
- TFCI Field 1 information		
- CHOICE CTFC representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set
- CTFC information		Not Present
- Power offset information		
DL Transport channel information common for all transport channel	A5, A6	
- SCCPCH TFCS		(This IE is repeated for TFC number.)
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE CTFC representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set
- CTFC information		Not Present
- Power offset information		FDD
- CHOICE mode		Not Present
- CHOICE DL parameters		
Deleted DL TrCH Information	A1,A2, A3,A4, A5	
- Downlink transport channel type		DCH
- Transport channel identity		6
Deleted DL TrCH Information	A2	
- Downlink transport channel type		DCH
- Transport channel identity		7
Deleted DL TrCH Information	A2	
- Downlink transport channel type		DCH
- Transport channel identity		8
Deleted DL TrCH Information	A5,A6	Not Present
Added or Reconfigured DL TrCH information	A1,A2, A3, A4,A5, A6	Not Present
Added or Reconfigured DL TrCH information	A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Downlink transport channel type		DCH
- DL Transport channel identity		10
- CHOICE DL parameters		ExplicitSameAsUL
- Uplink transport channel type		DCH
- UL TrCH Identity		5

Information Element		Value/remark
- TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size - DCH quality target - BLER Quality value - Transparent mode signalling info		 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set Explicit Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set -6.3 Not Present
Frequency info - UARFCN uplink (Nu) - UARFCN downlink (Nd) Maximum allowed UL TX power	A1,A2,A3,A4,A5,A6	 Reference to clause 5.1 Test frequenciesReference to TS34.108 clause 6.10 Parameter Set Reference to clause 5.1 Test frequenciesReference to TS34.108 clause 6.10 Parameter Set 33dBm
CHOICE *channel requirement*	A2, A3, A5, A6	Not Present
CHOICE channel requirement - Uplink DPCH power control info - DPCCH power offset - PC Preamble - SRB delay - Power Control Algorithm - TPC step size - Scrambling code type - Scrambling code number - Number of DPDCH - spreading factor - TFCI existence - Number of FBI bit - Puncturing Limit	A2, A2, A1,A2,A3,A4	Uplink DPCH info -6dB 1 frame 7 frames Algorithm1 1dB Long 0 (0 to 16777215) Not Present(1) Reference to TS34.108 clause 6.10 Parameter Set SF is reference to TS34.108 clause 6.10 Parameter Set 16 Reference to TS34.108 clause 6.10 Parameter Set TRUE Reference to TS34.108 clause 6.10 Parameter Set Not Present(0) Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set 0.96
CHOICE Mode - Downlink PDSCH information	A1,A2,A3,A4,A5,A6	FDD Not Present
Downlink information common for all radio links	A2, A3, A5, A6	Not Present
Downlink information common for all radio links - Downlink DPCH info common for all RL	A1,A2, A3, A4	

Information Element		Value/remark
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
- DPC mode		0 (single)
- CHOICE mode		FDD
- Power offset $P_{Pilot-DPDCH}$		~~TBD~~0
- DL rate matching restriction information		Not Present
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set ~~Reference to TS34.108 clause 6.10 Parameter Set~~ 32
- Fixed or Flexible Position		Reference to TS34.108 clause 6.10 Parameter Set ~~Flexible~~N/A
- TFCI existence		Reference to TS34.108 clause 6.10 Parameter Set ~~FALSE~~TRUE
- CHOICE SF~~Number of bits for Pilot bits(SF=128,256)~~		~~Reference to TS34.108 clause 6.10 Parameter Set~~ Otherwise
- DPCH compressed mode info		Not Present
~~- TGPSI~~		~~1~~
~~- TGPS Status Flag~~		~~inactive~~
~~- TGCFN~~		~~(Current CFN + (256 – TTI/10msec)) mod 256~~
~~- Transmission gap pattern sequence configuration parameters~~		
~~- TGMP~~		~~FDD Measurement~~
~~- TGPRC~~		~~62~~
~~- TGSN~~		~~8~~
~~- TGL1~~		~~10~~
~~- TGL2~~		~~5~~
~~- TGD~~		~~15~~
~~- TGPL1~~		~~35~~
~~- TGPL2~~		~~35~~
~~- RPP~~		~~Mode 1~~
~~- ITP~~		~~Mode 1~~
~~- CHOICE UL/DL Mode~~		~~DL~~
~~- Downlink compressed mode method~~		~~SF/2~~
~~- Downlink frame type~~		~~A~~
~~- DeltaSIR1~~		~~2.0~~
~~- DeltaSIRafter1~~		~~1.0~~
~~- DeltaSIR2~~		~~Not Present~~
~~- DeltaSIRafter2~~		~~Not Present~~
~~- N_Identify_abort~~		~~Not Present~~
~~- T_Reconfirm_abort~~		~~Not Present~~
- TX Diversity mode		None
- SSDT information		Not Present
- Default DPCH Offset Value		Not Present~~0~~
Downlink information for each radio link list	A1,A2,A3,A4	
-Downlink information for each radio link	~~A2~~	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Secondary CPICH info		Not Present
- Secondary scrambling code		
- channelisation code		
- DL channelisation code		
- Secondary scrambling code		3

Information Element		Value/remark
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set128
- Code number		0
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		Not Present
- Closed loop timing adjustment mode		Not Present
- SCCPCH information for FACH		Not Present
Downlink information for each radio link list	A2, A3, A4	
- Downlink information for each radio link	A4	
- CHOICE mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Power offset $P_{Pilot\text{-}DPDCH}$		TBD
- Secondary CPICH info		Not Present
- DL channelisation code		
- Secondary scrambling code		13
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set32
- Code number		SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)0
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		Not Present-a
- Closed loop timing adjustment mode		Not Present
- SCCPCH information for FACH		Not Present
- Downlink information for each radio link	A3	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Secondary CPICH info		Not Present
- DL channelisation code		
- Secondary scrambling code		3
- Spreading factor		8
- Code number		0
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		Not Present
- Closed loop timing adjustment mode		Not Present
- SCCPCH information for FACH		Not Present
Downlink information common for all radio links	A5, A6	
- Downlink information for each radio link	A5	
- Choice mode		FDD
- Primary CPICH info		Set to the default value of cell 1.
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- SCCPCH information for FACH		Not Present

Information Element		Value/remark
- Downlink information for each radio link	A6	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		150
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- SCCPCH information for FACH		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

~~Note: The radio bearer configurations used here are served as example only, test operator can choose to use other radio bearer configurations.~~

Contents of RADIO BEARER RELEASE FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identitifer	Checked to see if it is set to identical value of the same IE in the downlink RADIO BEARER RELEASE message.
Integrity check info	The presence if this IE is dependent on IXIT statements in TS 34.123-2. if integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Checked to see if it meets test requirement
Radio bearers for which reconfiguration would have succeeded	Not checked

Contents of UTRAN MOBILITY INFORMATION message: AM or UM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
New U-RNTI	See the test content
New C-RNTI	See the test content
UE Timers and constants in connected mode	
- T301	2000 milliseconds
- N301	2
- T302	4000 milliseconds
- N302	3
- T304	1000 milliseconds
- N304	3
- T305	60 minutes
- T307	50 seconds
- T308	320 milliseconds
- T309	8 seconds
- T310	320 milliseconds
- N310	5
- T311	500 milliseconds
- T312	5 seconds
- N312	200
- T313	10 seconds
- N313	200
- T314	20 seconds
- T315	30 seconds
- N315	200
- T316	50 seconds
- T317	1800 seconds
CN information info	Not Present
URA identity	Not present
Downlink counter synchronisation info	Not Present

Contents of UTRAN MOBILITY INFORMATION CONFIRM message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the value of the same IE in downlink UTRAN MOBILITY INFORMATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM, (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
~~Uplink integrity protection activation info~~	~~Not checked~~
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of RRC CONNECTION REJECT message: UM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Initial UE identity	Select the same type as in the IE "Initial UE Identity" in RRC CONNECTION REQUEST" message.~~Set to the UE's IMSI (GSM-MAP) or TMSI.~~
~~RRC transaction identifier~~	~~Arbitrarily selects an integer between 0 and 3~~
Rejection cause	Unspecified
Wait Time	0
Redirection info	Not Present

Contents of RRC CONNECTION SETUP message: UM (Transition to CELL_FACH)

Information Element	Value/remark
Message Type	
Initial UE identity	Select the same identity as in the IE "Initial UE Identity" in received RRC CONNECTION REQUEST" message~~Reference to TS34.108 clause 6.10 Parameter Set~~
RRC transaction identifier	~~Arbitrarily select a integer between 0 and 3~~0
Activation time	Not Present (Now)~~(256+CFN-(CFN MOD 8 + 8))MOD 256~~
New U-RNTI	
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
New C-RNTI	0000 0000 0000 0001B
RRC state indicator	CELL_FACH
UTRAN DRX cycle length coefficient	~~5~~9 ~~(2 to 12)~~
Capability update requirement	Not Present
~~- UE radio access capability update requirement~~	~~FALSE~~
~~- System specific capability update requirement~~	~~Not Present~~
Signalling RB information to setup	(UM DCCH for RRC)
- RB identity	1
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	UM RLC

Information Element	Value/remark
- Transmission RLC discard	
- SDU discard mode	Timer based no explicit~~Max DAT retransmissions~~
- Timer discard~~MAX_DAT~~	~~4~~50
~~- Timer_MRW~~	~~100~~
~~- MaxMRW~~	~~4~~
- CHOICE Downlink RLC mode	UM RLC
- RB mapping info	
- Information for each multiplexing option	2 RBMuxOptions
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	1
- CHOICE RLC size list	Configured
- MAC logical channel priority	1
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	1
~~- RB mapping info~~	
~~- Information for each multiplexing option~~	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- UL Transport channel identity	Not Present
- Logical channel identity	1
- CHOICE RLC size list	~~Explicit list~~Configured
~~- RLC size index~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~
- MAC logical channel priority	2
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- DL DCH Transport channel identity	Not Present
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	1
Signalling RB information to setup	(AM DCCH for RRC)
- RB identity	2
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200
- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200

Information Element	Value/remark
- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	2 RBMuxOptions
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	2
- CHOICE RLC size list	Configured
- MAC logical channel priority	2
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	2
~~- RB mapping info~~	
~~- Information for each multiplexing option~~	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- UL Transport channel identity	Not Present
- Logical channel identity	2
- CHOICE RLC size list	~~Explicit list~~Configured
~~- RLC size index~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~
- MAC logical channel priority	3
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- DL DCH Transport channel identity	Not Present
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	2
Signalling RB information to setup	(AM DCCH for NAS_DT High priority)
- RB identity	3
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200
- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	2 RBMuxOptions

Information Element	Value/remark
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	3
- CHOICE RLC size list	Configured
- MAC logical channel priority	3
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	3
~~- RB mapping info~~	
~~- Information for each multiplexing option~~	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- UL DCH Transport channel identity	Not Present
- Logical channel identity	3
- CHOICE RLC size list	~~Explicit list~~Configured
~~- RLC size index~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~
- MAC logical channel priority	4
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- DL DCH Transport channel identity	Not Present
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	3
Signalling RB information to setup	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200
- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	2 RBMuxOptions
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5

Information Element	Value/remark
- Logical channel identity	4
- CHOICE RLC size list	Configured
- MAC logical channel priority	4
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	4
~~- RB mapping info~~	
~~- Information for each multiplexing option~~	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- UL Transport channel identity	Not Present
- Logical channel identity	4
- CHOICE RLC size list	~~Explicit list~~Configured
~~- RLC size index~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~
- MAC logical channel priority	5
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- DL DCH Transport channel identity	Not Present
- DL DSCH Transport channel identity	Not Present
- Logical channel identity	4
UL Transport channel information for all transport channels	Not Present
~~- Allowed Transport Format combination~~	~~0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)~~
~~- PRACH TFCS~~	~~Not Present~~
~~- CHOICE mode~~	~~FDD~~
~~- TFC subset~~	~~(This IE is repeated for TFC number.)~~
~~- UL DCH TFCS~~	~~Not Present~~
Added or Reconfigured TrCH information list	TS 25.331 specifies that “Although this IE is not required when the IE "RRC state indicator" is set to "CELL_FACH", need is MP to align with ASN.1”
- Added or Reconfigured UL TrCH information	
- Uplink transport channel type	DCH
- UL Transport channel identity	~~15~~5
- TFS	
- CHOICE Transport channel type	Delicated transport channels
- Dynamic Transport format information	
- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set ~~0~~
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Transmission Time Interval	Not Present~~Not Present~~
- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set~~0~~
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set~~80~~
- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set~~No coding~~
- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set~~Not Present~~
- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set~~1~~
- CRC size	Reference to TS34.108 clause 6.10 Parameter Set~~0~~
DL Transport channel information common for all transport channel	Not Present(Refer to SIB type 5)
~~- SCCPCH TFCS~~	~~(This IE is repeated for TFC number.)~~
~~- CHOICE TFCI signalling~~	~~Normal~~
~~- TFCI Field 1 information~~	
~~- CHOICE CTFC representation~~	~~Complete reconfiguration~~

Information Element	Value/remark
~~- TFCS complete reconfigure information~~	
~~- CHOICE CTFC Size~~	~~Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.~~
~~- CTFC information~~	~~Refer to TS34.108 clause 6.10 Parameter Set~~
~~- Power offset information~~	~~Not Present~~
~~- CHOICE mode~~	~~FDD~~
~~- CHOICE DL parameters~~	~~Not Present~~
Added or Reconfigured TrCH information list	TS 25.331 specifies that "Although this IE is not required when the IE "RRC state indicator" is set to "CELL_FACH", need is MP to align with ASN.1"
- Added or Reconfigured DL TrCH information	
- Downlink transport channel type	DCH
- DL Transport channel identity	10~~15~~
- CHOICE DL parameters	Same ~~A~~as UL
- Uplink Transport channel type	DCH
- UL TrCH identity	~~1~~5
- DCH quality target	Not Present
- Transparent mode signalling info	Not Present
Frequency info	
- UARFCN uplink (Nu)	Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~
- UARFCN downlink (Nd)	Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~
Maximum allowed UL TX power	33dBm
CHOICE channel requirement	Not Present
Downlink information common for all radio links	Not Present
Downlink information for each radio link list	
- Downlink information for each radio link	
- Choice mode	FDD
- Primary CPICH info	~~Set to the default value of cell 1.~~
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	Not present
- SCCPCH information for FACH	Not Present

Contents of RRC STATUS message: AM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Identification of received message	Not ~~Present~~Checked
~~- Received message type~~	
~~- RRC transaction identifier~~	
Protocol error information	
- Protocol error cause	~~Value will be checked.~~Refer to test requirement.

Contents of SECURITY MODE FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is the identical to the same IE in the downlink SECURITY MODE COMMAND message.
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Refer to test requirement.~~Value will be checked~~

Contents of TRANSPORT CHANNEL RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type	A1, A2, A3, A4,A5,A6	
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_~~DCH~~FACH
UTRAN DRX cycle length coefficient	A1, A2, A3, A4,A5,A6	Not Present
CN information info		Not Present
URA identity		Not Present
Downlink counter synchronisation info		Not Present
UL Transport channel information for all transport channels	A1, A2, A3,A4, A5, A6	Not Present
~~UL Transport channel information for all transport channels~~	~~A1, A2, A3, A4~~	
~~- Allowed Transport Format combination~~		~~0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)~~
~~- PRACH TFCS~~		~~Not Present~~
~~- CHOICE mode~~		~~FDD~~
~~- TFC subset~~		~~(This IE is repeated for TFC number.)~~
~~- UL DCH TFCS~~		~~(This IE is repeated for TFC number.)~~
~~- Normal~~		
~~- TFCI Field 1 information~~		
~~- CHOICE CTFC representation~~		~~Addition~~

Information Element	Condition	Value/remark
- TFCS addition information		
- CHOICE CTFC Size		Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information		Refer to TS34.108 clause 6.10 Parameter Set
- Power offset information		
- CHOICE Gain Factors		Signalled Gain Factors
- Gain factor •c		0
- Gain factor •d		0
- Reference TFC ID		Not Present
- Power offset Pp-m		0dB
UL Transport channel information for all transport channels	A5, A6	
- Allowed Transport Format combination		0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)
- PRACH TFCS		Not Present
- CHOICE mode		FDD
- TFC subset		(This IE is repeated for TFC number.)
- UL DCH TFCS		Not Present
Added or Reconfigured UL TrCH information	A1, A2, A3, A4,A5, A6	Not Present
Added or Reconfigured UL TrCH information	A1, A2, A3, A4	
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		144Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		2(This IE is repeated for TFI number.)
- Transmission Time Interval		Not PresentNot Present
- Number of Transport blocks		0Reference to TS34.108 clause 6.10 Parameter Set
- Transmission Time Interval		Not Present
- Number of Transport blocks		1
- CHOICE Logical Channel List		AllALL
- Semi-static Transport Format information		
- Transmission time interval		40ms Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Convolutional Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		1/3Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		170Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		16Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information	A4	
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		336Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		5(This IE is repeated for TFI number.)
- Transmission Time Interval		Not PresentNot Present
- Number of Transport blocks		0Reference to TS34.108 clause 6.10 Parameter Set

Information Element	Condition	Value/remark
- Transmission Time Interval - Number of Transport blocks - Transmission Time Interval - Number of Transport blocks - Transmission Time Interval - Number of Transport blocks - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size		Not Present 1 Not Present 2 Not Present 3 Not Present 4 AllALL 20Reference to TS34.108 clause 6.10 Parameter Set TurboReference to TS34.108 clause 6.10 Parameter Set Not PresentReference to TS34.108 clause 6.10 Parameter Set 150Reference to TS34.108 clause 6.10 Parameter Set 16Reference to TS34.108 clause 6.10 Parameter Set
CHOICE *mode* - CPCH set ID - Added or Reconfigured TrCH information for DRAC list DRAC static information	A1,A2,A3, A4,A5,A6	FDD Not Present Not Present Not Present
DL Transport channel information common for all transport channel	A1, A2, A3, A4, A5,A6	Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE mode - CHOICE DL parameters - DL DCH TFCS - Normal - TFCI Field 1 information - CHOICE CTFC representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information	A4	 Not Present FDD ExplicitSameAsUL (This IE is repeated for TFC number.) Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - Normal - TFCI Field 1 information - CHOICE CTFC representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE mode - CHOICE DL parameters	A5, A6	 (This IE is repeated for TFC number.) Addition Refer to TS34.108 clause 6.10 Parameter Set Not Present FDD Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - Uplink transport channel type	A1, A2	 DCH 10 Same as UL DCH

Information Element	Condition	Value/remark
- UL TrCH Identity - DCH quality target - BLER Quality value - Transparent mode signalling info		5 6.3 Not Present
Added or Reconfigured DL TrCH information	A1, A2, A3, A4,A5, A6	Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size - DCH quality target - BLER Quality value - Transparent mode signalling info	A3, A4	 DCH 10 ExplicitSameAsUL Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set 6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH Identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A4	 DCH 6 ExplicitSameAsUL DCH 1 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set

Information Element	Condition	Value/remark
~~- DCH quality target~~ ~~- BLER Quality value~~ ~~- Transparent mode signalling info~~		~~-6.3~~ ~~Not Present~~
Frequency info - UARFCN uplink (Nu) - UARFCN downlink (Nd)	A1,A2,A3, A4,A5,A6	 Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~ Reference to clause 5.1 Test frequencies~~Reference to TS34.108 clause 6.10 Parameter Set~~
Maximum allowed UL TX power	A1,A2,A3, A4,A5,A6	33dBm
CHOICE *channel requirement*	~~A1, A2, A3,~~ A5, A6	Not Present
CHOICE channel requirement -Uplink DPCH power control info - DPCCH power offset - PC Preamble - SRB delay - Power Control Algorithm - TPC step size - Scrambling code type - Scrambling code number - Number of DPDCH - spreading factor - TFCI existence - Number of FBI bit - Puncturing Limit	A1, A2, A3, A4	Uplink DPCH info -6dB 1 frame 7 frames Algorithm1 1dB Long 0 (0 to 16777215) Not Present(1) ~~SF is r~~Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set~~TRUE~~ Reference to TS34.108 clause 6.10 Parameter Set ~~Not Present(0)~~ Reference to TS34.108 clause 6.10 Parameter Set ~~Reference to TS34.108 clause 6.10 Parameter Set 0.96~~
CHOICE Mode - Downlink PDSCH information	A1,A2,A3, A4,A5,A6	FDD Not Present
Downlink information common for all radio links	~~A1, A2, A3,~~A5, A6	Not Present
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing indicator - CFN-targetSFN frame offset - Downlink DPCH power control information - DPC mode - CHOICE mode - Power offset $P_{Pilot-DPDCH}$ - DL rate matching restriction information - Spreading factor - Fixed or Flexible Position - TFCI existence - CHOICE SF~~Number of bits for Pilot bits(SF=128,256)~~ - DPCH compressed mode info ~~- TGPSI~~ ~~- TGPS Status Flag~~	A1, A2, A3, A4	 Maintain Not Present 0 (single) FDD ~~TBD~~0 Not Present Reference to TS34.108 clause 6.10 Parameter Set ~~32~~ Reference to TS34.108 clause 6.10 Parameter Set ~~Flexible~~ Reference to TS34.108 clause 6.10 Parameter Set ~~TRUE~~ ~~Not Present~~Otherwise Not Present ~~1~~ ~~Inactive~~

Information Element	Condition	Value/remark
~~- TGCFN~~ ~~- Transmission gap pattern sequence configuration parameters~~ ~~- TGMP~~ ~~- TGPRC~~ ~~- TGSN~~ ~~- TGL1~~ ~~- TGL2~~ ~~- TGD~~ ~~- TGPL1~~ ~~- TGPL2~~ ~~- RPP~~ ~~- ITP~~ ~~- CHOICE UL/DL Mode~~ ~~- Downlink compressed mode method~~ ~~- Downlink frame type~~ ~~- DeltaSIR1~~ ~~- DeltaSIRafter1~~ ~~- DeltaSIR2~~ ~~- DeltaSIRafter2~~ ~~- N_Identify_abort~~ ~~- T_Reconfirm_abort~~ - TX Diversity mode - SSDT information - Default DPCH Offset Value		~~(Current CFN + (256 – TTI/10msec)) mod 256~~ ~~FDD Measurement~~ ~~62~~ ~~8~~ ~~10~~ ~~5~~ ~~15~~ ~~35~~ ~~35~~ ~~Mode 1~~ ~~Mode 1~~ ~~DL~~ ~~SF/2~~ ~~A~~ ~~2.0~~ ~~1.0~~ ~~Not Present~~ ~~Not Present~~ ~~Not Present~~ ~~Not Present~~ None Not Present ~~0~~Not Present
Downlink information for each radio link list - Downlink information for each radio links - CHOICE mode - Primary CPICH info - Primary scrambling code - PDSCH with SHO DCH info - PDSCH code mapping - Downlink DPCH info for each RL - Primary CPICH usage for channel estimation - DPCH frame offset - Power offset $P_{Pilot-DPDCH}$ - Secondary CPICH info - DL channelisation code - Secondary scrambling code - Spreading factor - Code number - Scrambling code change - TPC combination index - SSDT Cell Identity - Closed loop timing adjustment mode - SCCPCH information for FACH	A1, A2, A3, A4 ~~A1, A4~~	 FDD 100 Not Present Not Present Primary CPICH may be used 0 chips ~~TBD~~0 Not Present ~~1~~4 Reference to TS34.108 clause 6.10 Parameter Set ~~SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)~~0 No change 0 Not Present~~ a~~ Not Present Not Present

Information Element	Condition	Value/remark
~~- Downlink information for each radio link~~	~~A2~~	
~~- Choice mode~~		~~FDD~~
~~- Primary CPICH info~~		
~~- Primary scrambling code~~		~~100~~
~~- PDSCH with SHO DCH info~~		~~Not Present~~
~~- PDSCH code mapping~~		~~Not Present~~
~~- Downlink DPCH info for each RL~~		
~~- Primary CPICH usage for channel estimation~~		~~Primary CPICH may be used~~
~~- DPCH frame offset~~		~~0 chips~~
~~- Secondary CPICH info~~		~~Not Present~~
~~- Secondary scrambling code~~		
~~- channelisation code~~		
~~- DL channelisation code~~		
~~- Secondary scrambling code~~		~~4~~
~~- Spreading factor~~		~~128~~
~~- Code number~~		~~0~~
~~- Scrambling code change~~		~~No change~~
~~- TPC combination index~~		~~0~~
~~- SSDT Cell Identity~~		~~Not Present~~
~~- Closed loop timing adjustment mode~~		~~Not Present~~
~~- SCCPCH information for FACH~~		~~Not Present~~
~~- Downlink information for each radio link~~	~~A3~~	
~~- Choice mode~~		~~FDD~~
~~- Primary CPICH info~~		
~~- Primary scrambling code~~		~~100~~
~~- PDSCH with SHO DCH info~~		~~Not Present~~
~~- PDSCH code mapping~~		~~Not Present~~
~~- Downlink DPCH info for each RL~~		
~~- Primary CPICH usage for channel estimation~~		~~Primary CPICH may be used~~
~~- DPCH frame offset~~		~~0 chips~~
~~- Secondary CPICH info~~		~~Not Present~~
~~- DL channelisation code~~		
~~- Secondary scrambling code~~		~~4~~
~~- Spreading factor~~		~~8~~
~~- Code number~~		~~0~~
~~- Scrambling code change~~		~~No change~~
~~- TPC combination index~~		~~0~~
~~- SSDT Cell Identity~~		~~Not Present~~
~~- Closed loop timing adjustment mode~~		~~Not Present~~
~~- SCCPCH information for FACH~~		~~Not Present~~
~~Downlink information for each radio link list~~	~~A5, A6~~	
- Downlink information for each radio link	A5	
- Choice mode		FDD
- Primary CPICH info		~~Set to the default value of cell 1.~~
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- SCCPCH information for FACH		Not Present
- Downlink information for each radio link	A6	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		150
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- SCCPCH information for FACH		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

~~Note: The radio bearer configurations used here are served as example only, test operator can choose to use other radio bearer configurations.~~

Contents of TRANSPORT CHANNEL RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink TRANSPORT CHANNEL RECONFIGURATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
CHOICE mode	FDD
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM and (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identitifer	Checked to see if it is set to identical value of the same IE in the downlink TRANSPORT CHANNEL RECONFIGURATION message.
Integrity check info	The presence if this IE is dependent on IXIT statements in TS 34.123-2. if integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Checked to see if it meets test requirement

Contents of TRANSPORT FORMAT COMBINATION CONTROL message: AM or UM (in CELL_DCH)

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
CHOICE mode	FDD
DPCH/PUSCH TFCS in Uplink	
- CHOICE *Subset representation*	Allowed transport format combination list
- Allowed Transport format combination ~~index~~	0 (The TFC is constructed from ALL TF0)
Activation time for TFC subset	Not Present
TFC Control duration	Not Present

Contents of UE CAPABILITY ENQUIRY message: AM or UM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Capability update requirement	
- UE radio access capability update requirement	TRUE

Contents of UE CAPABILITY INFORMATION message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink UE CAPABILITY ENQUIRY message.
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
UE radio access capability	Value will be checked. Stated capability must be compatible with 34.123-2 (ICS statements) and the user settings
- ICS Version	
- PDCP Capability	
- RLC Capability	
- Transport channel capability	
- RF Capability FDD	
- RF Capability TDD	
- Physical channel capability	
- UE multi-mode/multi-RAT capability	
- Security Capability	
- LCS Capability	
- Measurement capability	
UE radio access capability extension	Value will be checked. Stated capability must be compatible with 34.123-2 (ICS statements) and the user settings
UE system specific capability	Not Checked

Contents of UE CAPABILITY INFORMATION CONFIRM message: UM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.

Contents of URA UPDATE message: TM

Information Element	Value/remark
Message Type	
U-RNTI	
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Checked to see if it is absent
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
URA update cause	See the test content
Protocol error indicator	Checked to see if it is absent or set to 'FALSE'
Protocol error information	Checked to see if it is absent

Contents of URA UPDATE CONFIRM message: UM

Information Element	Value/remark
Message Type	
U-RNTI	If this message is sent on CCCH, use the following values. Else, this IE is absent.
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Arbitrarily selects and integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC state indicator	URA_PCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	See the test content
Downlink counter synchronisation info	Not Present

3GPP TSG-T1 Meeting #13
Cancun, Mexico, 29th – 30th November 2001

Tdoc T1-010415

CR-Form-v4

CHANGE REQUEST

⌘ **34.123-1 CR 122** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title: ⌘	Changes to clause 12 Elementary procedure for Packet Switched Mobility Management	
Source: ⌘	Nokia	
Work item code: ⌘	TEI	***Date:*** ⌘ 2001-11-29
Category: ⌘	**F**	***Release:*** ⌘ REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘ Changes are based on CRs to 51.010-1 clause 44 approved in GERAN WG5 #1 Plenary Meeting

Summary of change: ⌘ GERAN WG5 #1 reference documents and the changes are listed below:

1) G5-010077
Effected test case 12.2.1.3.
In current test case implementation test system should deactivate still deactivated cell and activate an already activated cell when repeating the test sequence. Repetition of Test Sequence changed to start from step 17.

2) G5-010146
Effected test cases 12.2.1.4 & 12.4.2.4 and clause 12.1.
In clause 12.1 added definitions of RAI-8, RAI-9 and RAI-10.
In 12.2.1.4 Test procedure 1: Cell A should not be the Home PLMN of the UE. For that reason cell A set to RAI-8, cell B to RAI-8 and cell C to RAI-9, cell D remains RAI-2.
In 12.2.1.4 Test procedure 2: Cell A should not be the Home PLMN of the UE. For that reason cell A is set to RAI-2. As a result the Attach Accept message in step 10 has to include RAI-2 instead of RAI-1 (is the Home PLMN of the UE)
In 12.4.2.4 because Cell A, B, C, D should not be the Home PLMN of the UE cell A is set to RAI-8, cell B to RAI-10 and cell C to RAI-9, cell D remains RAI-2.

3) G5-010078
Effected test case 12.2.1.6.
'Random' changed to 'arbitrarily chosen' in Initial Conditions in 12.2.1.6.4.1 and 12.2.1.6.4.2.
Access control class 'X' corrected to 'x'.
Step 13 in Test procedure 1 changed so that repetition starts with step 3 instead of step 2.
Initial conditions for the UE in changed to 'P-TMSI-2' instead of 'P-TMSI-1'.

4) G5-010162
Effected test case 12.2.2.3.
In step 7 of the Expected Sequence ATTACH REQUEST should accept 'Combined PS / IMSI attached'

5) G5-010085
Effected test case 12.3.1.3.
Added 'Switch on off button' in Related ICS/IXIT statement.
Changed reference in Expected Sequence step 1.
Contraints for ATTACH REQUEST in step 21 corrected, as they do not match previous steps and core specifications. In step 4 in ATTACH ACCEPT, P-TMSI and P-TMSI signature is not included.

6) G5-010086
Effected test case 12.3.1.4.
Correction of step 16. UE should ignore the GMM Information message sent by the SS in step 15 or send a GMM Status message with cause 'Message type non-existent or not implemented'.

7) G5-010088
Effected test case 12.3.2.2.
Test step 2 in the Expected Sequence corrected.

8) G5-010090
Message names corrected throughout clause 12 to be in line with the core specification 24.008 (ROUTING AREA UPDATING REQUEST changed to ROUTING AREA UPDATE REQUEST, ROUTING AREA UPDATING ACCEPT changed to ROUTING AREA UPDATE ACCEPT, ROUTING AREA UPDATING COMPLETE changed to ROUTING AREA UPDATE COMPLETE and ROUTING AREA UPDATING REJECT changed to ROUTING AREA UPDATE REJECT).
Effected test case 12.4.1.2.
Attach Type in step 17 ATTACH REQUEST changed to 'PS attach' and Attach result in step 18 ATTACH ACCEPT changed to 'PS only attached'.
Detach type = 'power switched off, PS detach' in step 21 DETACH REQUEST was missing.

9) G5-010094
Effected test case 12.4.1.6.
Change step 1 and 2 in order to guarantee correct sequence.
In step 19 cell C has to be switched off before repeating expected sequence from step 2.

10) G5-010096
Effected test case 12.4.1.8.
Message name P-TMSI REALLOCATION REQUEST changed to P-TMSI REALLOCATION COMMAND to be in line with the core specification 24.008.

11) G5-010157
Effected test case 12.4.2.2.
Expected sequence changed. Step 7 describes the transition from Cell A to Cell B as if it was a cell re-selection. The transition must be done by handover procedure and thus it is not necessary to manipulate the level of the cells.

12) G5-010098
Effected test case 12.4.2.6.
'Random' changed to 'arbitrarily chosen' in Initial Conditions 12.4.2.6.4.1 and 12.4.2.6.4.2.
Access control class 'X' corrected to 'x'.
Step numbering and references in Expected Sequences corrected.
In step 12 Mobile Identity changed to TMSI-1 in Test Procedure 2.
Initial Conditions for the SS completed and corrected in order to clarify them.
Editorial corrections.

		13) G5-010099 Effected test case 12.4.2.7. Step numbering and references in Expected Sequence corrected. Initial Conditions for the UE corrected to 'The UE has a valid IMSI'. 14) G5-010124 Effected test case 12.4.3.3. Update type changed in step 12 to be 'combined RA/LA updating with IMSI attach'.
Consequences if not approved:	⌘	Mismatch between core specification 24.008 and test specification 34.123-1. Mismatch between test specifications 51.010-1 and 34.123-1.

Clauses affected:	⌘	12.1, 12.2.1.3, 12.2.1.4, 12.2.1.6, 12.2.2.3, 12.3.1.3, 12.3.1.4, 12.3.2.2, 12.4.1.1, 12.4.1.2, 12.4.1.3, 12.4.1.4a, 12.4.1.4b, 12.4.1.5, 12.4.1.6, 12.4.1.7, 12.4.1.8, 12.4.2.1, 12.4.2.2, 12.4.2.4, 12.4.2.5b, 12.4.2.6, 12.4.2.7, 12.4.2.8, 12.4.2.9, 12.4.2.10, 12.4.3.1, 12.4.3.2, 12.4.3.3, 12.4.3.4, 12.6.1.1, 12.6.1.2, 12.6.1.3.1, 12.6.1.3.2, 12.9.9		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Affects R99 and REL-4.		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		REQUEST PDP CONTEXT ACTIVATION	Request the activation of a PDP context with the transaction identifier flag set to "1"
2		SS		Wait 30 seconds to ensure UE does not request context activation
3		UE		Initiate a context request
4	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE
5	←		ACTIVATE PDP CONTEXT ACCEPT	Unknown IE encoded as 'comprehension required'
6	→		SM STATUS	Cause set to #96
7		SS		Wait T3380 seconds
8	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE (auto-generated)
9	←		ACTIVATE PDP CONTEXT ACCEPT	Out of sequence IE encoded as 'comprehension required'
10	→		SM STATUS	Cause set to #96
11		SS		Wait T3380 seconds
12	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE (auto-generated)
13	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
16	←		DEACTIVATE PDP CONTEXT REQUEST	Try to deactivate the context with a different transaction identifier to that used to activate the context
17	→		SM STATUS	Cause set to # 81
18	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context
19	→		SM STATUS	Cause set to # 96
20	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context
21	→		SM STATUS	Cause set to # 96
22	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context
23	→		SM STATUS	Cause set to # 96

11.4.1.5 Test requirements

TBD.

12 Elementary procedure for Packet Switched Mobility Management

12.1 Applicability, default conditions and default messages

All test cases for PS mobility management apply for all PS mobiles unless otherwise stated in a specific test. Within each test case, the ICS statement indicates whether the test shall be performed for mobiles that can only operate in mode - class A, only in mode - class C , or in both mode - class A and C. For some procedures, the mobile class is of no importance.

Note that only the layer 3 messages are described in the document. The mapping of the layer 3 messages to lower layers and the use of logical channels is not described in the present document.

The terms 'PS/CS mode of operation' and 'PS mode of operation' are not used in the present document with some exceptions. Instead the terms 'UE operation mode A' and 'UE operation mode C' are used.

The default conditions and default message contents not specified in this clause must be set as in "PS default conditions"

Below is a list of the RAI values and the corresponding RAC, LAC and MCC used in the test cases:

RAI-1: MCC1/MNC1/LAC1/RAC1 (Used if only one cell)

RAI-2: MCC2/MNC1/LAC1/RAC1

RAI-3: MCC1/MNC1/LAC2/RAC1

RAI-4: MCC1/MNC1/LAC1/RAC2

RAI-5: MCC1/MNC1/LAC1/RAC3

RAI-6: MCC2/MNC1/LAC2/RAC1

RAI-7: MCC2/MNC1/LAC1/RAC2

RAI-8: MCC1/MNC2/LAC1/RAC1

RAI-9: MCC1/MNC2/LAC2/RAC1

RAI10: MCC1/MNC2/LAC1/RAC2

If the User Equipment initial condition specifies that the mobile has a valid IMSI but the initial condition does not mention P-TMSI, than that shall be interpreted as that the mobile has no valid P-TMSI.

The tests are based on 3GPP TS 24.008.

12.2 PS attach procedure

This procedure is used to indicate for the network that the IMSI is available for traffic by establishment of a GMM context.

12.2.1 Normal PS attach

The normal PS attach procedure is a GMM procedure used by PS UEs of UE operation mode A or C to IMSI attach for PS services only.

12.2.1.1 PS attach / accepted

12.2.1.1.1 Definition

12.2.1.1.2 Conformance requirement

1) If the network accepts the PS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the UE shall acknowledge the P-TMSI and continue communication with the P-TMSI.

2) If the network accepts the PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

3) If the network accepts the PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the PS attach procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is allocated;

2) P-TMSI / P-TMSI signature is reallocated;

3) Old P-TMSI / P-TMSI signature is not changed.

12.2.1.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI.

2) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS reallocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. The UE will not answer signalling addressed to the old P-TMSI.

3) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the old P-TMSI.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 26.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
6a	->		RRC CONNECTION REQUEST	
6b	<-		RRC CONNECTION SETUP	
6c	->		RRC CONNECTION SETUP COMPLETE	
7	->		SERVICE REQUEST	Service type = "paging response"
7a	<-		RRC CONNECTION RELEASE	
7b	->		RRC CONNECTION RELEASE COMPLETE	
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
10	UE			The UE is powered up or switched on and initiates an attach (see ICS).
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14	<-		GMM INFORMATION	Message sent with P-TMSI-1
14b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
15	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
16	UE			No response from the UE to the request. This is checked for 10 seconds.
17	UE			The UE is switched off or power is removed (see ICS).
18	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
19	UE			The UE is powered up or switched on and initiates an attach (see ICS).
20	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
21	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
22	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE 1 (used for NW-mode II).
22a	->		RRC CONNECTION REQUEST	

Step	Direction		Message	Comments
	UE	SS		
22b	<-		RRC CONNECTION SETUP	
22c	->		RRC CONNECTION SETUP COMPLETE	
23	->		SERVICE REQUEST	Service type = "paging response"
23a	<-		RRC CONNECTION RELEASE	
23b	->		RRC CONNECTION RELEASE COMPLETE	
24	UE			The UE is switched off or power is removed (see ICS).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
26	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 25.

Specific message contents

None.

12.2.1.1.5 Test requirements

UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

- perform the following actions depending on the Mobile identity in the ATTACH REQUEST message and on the Mobile identity in the ATTACH ACCEPT message.

  Case 1) The Mobile identity in the ATTACH REQUEST is the IMSI and the Mobile identity in the ATTACH ACCEPT message is the P-TMSI.

  UE shall:

  - acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the P-TMSI.

  Case 2) The Mobile identity in the ATTACH REQUEST is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the new P-TMSI.

  UE shall:

  - acknowledge the new P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the other P-TMSI.

  Case 3) The Mobile identity in the ATTACH REQUEST is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the same P-TMSI.

  UE shall:

  - acknowledge the same P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the same P-TMSI.

12.2.1.2 PS attach / rejected / IMSI invalid / illegal UE

12.2.1.2.1 Definition

12.2.1.2.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

3) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE', the User Equipment shall delete the LAI.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'illegal UE'.

12.2.1.2.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).

All three cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Illegal UE'. The SS checks that the UE does not perform PS attach in the same or another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause = 'Illegal UE'.
				The following messages are sent and shall be received on cell B.
6	SS			The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	UE			The UE initiates an attach by MMI or by AT command.
10	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
11	SS			The SS deactivates cell B and activates cell C.
12	UE			Cell C is preferred by the UE.
13	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
14	UE			The UE initiates an attach by MMI or by AT command.
15	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
16	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
17	UE			The UE is powered up or switched on.
18	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
19	UE			The UE initiates an attach (see PICS).
20	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
21	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->		ATTACH COMPLETE	
23	UE			The UE is switched off or power is removed (see ICS).
24	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- set the PS update state to GU3 ROAMING NOT ALLOWD and delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- not send the ATTACH REQUEST message to SS, even if there is an instruction of attach request from MMI or from AT command.

12.2.1.3 PS attach / rejected / IMSI invalid / PS services not allowed

12.2.1.3.1 Definition

12.2.1.3.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
2) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.3.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS services not allowed' (no valid PS-subscription for the IMSI).

12.2.1.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal attach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach in another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step ~~16~~17.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH REJECT	GMM cause = 'PS services not allowed'
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
10	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
11		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
13		->	ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
16				The SS deactivates cell B and activates cell A.
17	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 15.

Specific message contents

None.

12.2.1.3.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- set the PS update state to GU3 ROAMING NOT ALLOWD.
- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.

12.2.1.4 PS attach / rejected / PLMN not allowed

12.2.1.4.1 Definition

12.2.1.4.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall:

   1.1 not perform PS attach when switched on in the same routing area or location area.

   1.2 not perform PS attach when in the same PLMN and when that PLMN is not selected manually.

   1.3 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.4 store the PLMN in the 'forbidden PLMN' list.

2) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall perform PS attach when a new PLMN is entered.

3) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' and if after that the PLMN from which this rejection was received, is manually selected, the User Equipment shall perform a PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.4.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PLMN not allowed'.

12.2.1.4.4 Method of test

12.2.1.4.4.1 Test procedure 1

Initial condition

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/~~MNC1~~MNC2/LAC1/RAC1 (RAI-~~1~~8), cell B in MCC1/~~MNC1~~MNC2/LAC1/RAC1 (RAI-~~1~~8), cell C in MCC1/~~MNC1~~MNC2/LAC2/RAC1 (RAI-~~3~~9) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2).
All four cells are operating in network operation mode II (in case of UE operation mode A). The PLMN of the four cells should NOT be that of the UE Home PLMN.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-~~1~~8. UE is Idle Updated on cell A.

Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No (only if mode C not supported)

Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PLMN not allowed'. The SS checks that the UE does not perform PS attach if activated in the same routing area or location area and performs PS attach only when a new PLMN is entered.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-~~1~~8
5		<-	ATTACH REJECT	GMM cause = 'PLMN not allowed'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
		SS		The following messages are sent and shall be received on cell B.
7	UE			The UE is switched off.
8	SS			The SS deactivates cell A and activates cell B.
9	UE			The UE is powered up or switched on.
10	UE			Cell B is preferred by the UE.
11	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
		SS		The following messages are sent and shall be received on cell C.
12	SS			The SS deactivates cell B and activates cell C.
13	UE			Cell C is preferred by the UE.
14	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
		SS		The following messages are sent and shall be received on cell D.
15	SS			The SS deactivates cell C and activates cell D.
16	UE			Cell D is preferred by the UE.
17	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
18	UE			The UE initiates an attach automatically, by MMI or by AT command.
19		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
20		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
21		->	ATTACH COMPLETE	
22	UE			The UE is switched off or power is removed (see ICS).
23		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.1.4.4.2 Test procedure 2

Initial condition

System Simurator:

One cell operating in network operation mode II: MCC2/MNC1/LAC1/RAC1 (RAI-2). The PLMN of the cell should NOT be that of the Mobile Station Home PLMN.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-~~1~~2. UE is Idle Updated on cell A.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PLMN not allowed'. The subscribers access rights is changed to allow PS attach. Then the PLMN from which this rejection was received is manually selected and the SS check that a PS attach is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C or A (see PICS).
2	UE			The UE is powered up or switched on and initiates an attach (see PICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-~~1~~2
4	<-		ATTACH REJECT	GMM cause = 'PLMN not allowed'
5	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
6	UE			The current PLMN is selected manually.
7	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
8	UE			The UE initiates an attach automatically, by MMI or by AT command.
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-~~1~~2
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see PICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.4.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- delete the stored RAI, PS CKSN, P-TMSI and P-TMSI signature.
- store the PLMN in the 'forbidden PLMN list'
- perform the following actions depending on the PLMN or the routing area or the location area

  Case 1) UE is in the same routing area or location area when the power is switched on,

  UE shall:

  - not perform PS attach.

  Case2) UE is in the same PLMN, and this PLMN is not selected manually

  UE shall:

  - not perform PS attach.

  Case3) UE is in a new PLMN.

  UE shall:

  - perform PS attach.

  Case4) UE is in the new PLMN, and this PLMN is selected manually

  UE shall

  - perform PS attach.

12.2.1.5a PS attach / rejected / roaming not allowed in this location area

12.2.1.5a.1 Definition

12.2.1.5a.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment shall:

   1.1 not perform PS attach when in the same location area.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for roaming' list.

   1.4 perform PS attach when a new location area is entered.

   1.5 Periodically search for its HPLMN.

2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.

3) The UE shall be capable of storing at least 6 entries in the list of 'Forbidden location areas for roaming'.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.5a.3 Test purpose

Test purpose 1

To test that on receipt of a rejection using the 'roaming not allowed in this location area' cause code, the UE ceases trying to attach on that location area. Successful PS attach procedure is possible in other location areas.

Test purpose 2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

Test purpose 3

To test that at least 6 entries can be held in the list of 'forbidden location areas for roaming' (the requirement in 3GPP TS 24.008 is to store at least 10 entries. This is not fully tested by the third procedure).

Test purpose 4

To test that if a cell of the Home PLMN is available then the UE returns to it in preference to any other available cell.

12.2.1.5a.4 Method of test

12.2.1.5a.4.1 Test procedure 1

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN), cell B in

MCC2/MNC1/LAC2/RAC1 (RAI-6, Not HPLMN) and cell C in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN).

All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. A new attempt for a PS attach is not possible. Successful PS attach / detach procedures are performed in another location area. A new attempt for a PS attach is performed in the 1st location area. This attempt shall not succeed, as the LA is on the forbidden list.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 19.
2		SS		The SS activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
5		<-	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
7		SS		The SS Deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
10	UE			The UE initiates an attach automatically, by MMI or by AT command.
11		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6
13		->	ATTACH COMPLETE	
14	UE			The UE initiates a PS detach (without power off) by MMI or by AT command .
15		->	DETACH REQUEST	Detach type = 'normal detach, PS detach'
16		<-	DETACH ACCEPT	
				The following messages are sent and shall be received on cell C.
17		SS		The SS deactivates cell B and activates cell C.
18	UE			Cell C is preferred by the UE.
19	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds). The UE is switched off or power is removed (see ICS)
20	UE			UE is switched off.
21		SS		The SS deactivates cell C.
22	UE			The UE is set in UE operation mode A if supported (see ICS) and the test is repeated from step 2 to step 20.

12.2.1.5a.4.2 Test procedure 2

Initial condition

System Simulator:

One cell in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN) operating in network operation mode II.

User Equipment:

TheUE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 s and switched on again. The SS check that a PS attach is possible on the cell on which the PS attach had been rejected.

If USIM removal is possible without switching off:The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. The USIM is removed and inserted in the UE. The SS check that a PS attach is possible on the cell on which the PS attach had been rejected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			If UE operation mode C is supported, the UE is set in UE operation mode C (see PICS). If UE operation mode C is not supported, the UE is set in UE operation mode A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
4	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
5	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
6	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
7	UE			The UE is powered up or switched on and initiates an attach (see ICS).
8	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.1.5a.4.3 Test procedure 3

Initial condition

System Simulator:

Six cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-3, Not HPLMN), cell C in MCC2/MNC1/LAC3/RAC1 (Not HPLMN), cell D in MCC2/MNC1/LAC4/RAC1 (Not HPLMN), cell E in MCC2/MNC1/LAC5/RAC1 (Not HPLMN), cell F in MCC2/MNC1/LAC6/RAC1 (Not HPLMN).
All six cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. This is done for 6 different location areas. Then the SS checks that the UE does not attempt to perform an attach procedure on the non-allowed location areas.

Different types of UE may use different methods to periodically clear the list of forbidden areas (e.g. every day at 12am) for roaming. If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS is set in network operation mode II and activates cell A.
2		UE		The UE is set in UE operation mode C (see ICS).
3		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
5	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		UE		Cell B is preferred by the UE.
9		UE	Registration on CS	See TS 34.108 This is applied only in case of UE operation mode A. Parameter mobile identity is IMSI.
10		UE		The UE initiates an attach automatically, by MMI or by AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
13		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
14		SS		The SS deactivates cell B and activates cell C.
15		UE		Cell C is preferred by the UE.
16		UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
17		UE		The UE initiates an attach automatically, by MMI or by AT command.
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
20		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell D.
21		SS		The SS deactivates cell C and activates cell D.
22		UE		Cell D is preferred by the UE.
23		UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
24		UE		The UE initiates an attach automatically, by MMI or by AT command.
25	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
26	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'

Step	Direction		Message	Comments
	UE	SS		
27	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell E.
28	SS			The SS deactivates cell D and activates cell E.
29	UE			Cell E is preferred by the UE.
30	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
31	UE			The UE initiates an attach automatically, by MMI or by AT command.
32	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
33	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
34	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell F.
35	SS			The SS deactivates cell E and activates cell F.
36	UE			Cell F is preferred by the UE.
37	UE			The UE initiates an attach automatically, by MMI or by AT command.
38	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
39	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
40	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
				The following messages are sent and shall be received on cell E.
41	SS			The SS deactivates cell F and activates cell E.
42	SS			Cell E is preferred by the UE.
43	UE			The UE initiates an attach automatically, by MMI or by AT command.
44	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
45	SS			The SS deactivates cell E and activates cell C.
46	SS			Cell C is preferred by the UE.
47	UE			The UE initiates an attach automatically, by MMI or by AT command.
48	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell A.
49	SS			The SS deactivates cell C and activates cell A.
50	SS			Cell A will be preferred by the UE.
51	UE			The UE initiates an attach automatically, by MMI or by AT command.
52	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).

12.2.1.5a.4.4 Test procedure4

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (not HPLMN, RAI-2) and cell B in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area A second cell belonging to the HPLMN is activated. It is checked that the UE returns to its HPLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
5	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
7		SS		Activate cell B.
8	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
9	UE			The UE initiates an attach automatically, by MMI or by AT command.
10	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
12	->		ATTACH COMPLETE	
13	UE			The UE is switched off or power is removed (see ICS).
14	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.5a.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- not perform PS attach when UE is in the same location area.
- delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- store the LA in the 'forbidden location areas for roaming' list.
- perform PS attach when a new location area is entered.
- search for its HPLMN periodically.

When Switched off or when the USIM is removed,

UE shall:

- reset the 'forbidden location areas for roaming' list.

12.2.1.5b PS attach / rejected / No Suitable Cells In Location Area

12.2.1.5b.1 Definition

12.2.1.5b.2 Conformance requirement

(1) If the network rejects a PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

1.1 not perform PS attach when in the same location area.

1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

1.3 store the LA in the 'forbidden location areas for roaming' list.

1.4 perform PS attach when a new location area is entered.

Reference

3GPP TS 24.008 clauses 4.7.3.1.

12.2.1.5b.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'No Suitable Cells In Location Area'.

12.2.1.5b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform PS attach procedure in that cell.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
	SS			The SS activates three cells simultaneously. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	GMM cause = 'No Suitable Cells In Location Area'
5	SS			The SS initiates the RRC connection release. The following message are sent and shall be received on cell B.
6	UE		Registration on CS	See TS 34.108
7	UE			The UE initiates an attach automatically, by MMI or by AT command.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
9	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
10	->		ATTACH COMPLETE	
11	UE			The UE is switched off or power is removed (see ICS).
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.5b.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when the UE is powered up or switched on.

- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- search for a suitable cell in a different location area on the same PLMN.

12.2.1.6 PS attach / abnormal cases / access barred due to access class control

12.2.1.6.1 Definition

12.2.1.6.2 Conformance requirement

1) The UE shall not perform PS attach procedure, but stays in the current serving cell and applies normal cell reselection process.
2) The User Equipment shall perform the PS attach procedure when:
   2.1 Access is granted.
   2.2 Cell is changed.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.6.3 Test purpose

Test purpose1

To test the behaviour of the UE in case of access class control (access is granted).

Test purpose2

To test the behaviour of the UE in case of access class control (access is granted).

12.2.1.6.4 Method of test

12.2.1.6.4.1 Test procedure1

Initial condition

An ~~random~~ access class x (0-15) is arbitrarily chosen~~selected~~. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred.

System Simulator:

One cell operating in network operation mode II.
Access class x barred.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS indicates access class x barred. A PS attach procedure is not performed.

The SS indicates that access class x is not barred. A PS attach procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is programmed with access class x.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 12.
3	UE			The UE is powered up or switched on and attempts to initiate an attach (see ICS).
4	UE			No ATTACH REQUEST sent to SS, as access class ~~X~~ x is barred (SS waits 30 seconds).
5		SS		The access class x is not barred anymore.
6	UE			The UE automatically initiates a PS attach.
7	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
8	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	->		ATTACH COMPLETE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
12		SS		The SS is set in network operation mode II.
13	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step ~~2~~ 3 to step 11.

12.2.1.6.4.2 Test procedure2

Initial condition

An ~~random~~ access class x (0-15) is arbitrarily chosen~~selected~~. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell A.

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x barred, cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x not barred.
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-~~1~~2, P-TMSI-2 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS indicates access class x barred. A PS attach procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A PS attach procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is programmed with access class x.
		SS		The following messages are sent and shall be received on cell A.
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is set in UE operation mode C (see ICS).
4	UE			The UE is powered up or switched on and attempts to initiate an attach (see ICS).
5	UE			No ATTACH REQUEST sent to SS, as access class ~~X~~ x is barred (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
6		SS		Activate cell B.
7	UE			The UE automatically initiates an attach.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
10	->		ATTACH COMPLETE	
11	UE			The UE is switched off or power is removed (see ICS).
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.6.5 Test requirements

UE shall:

- perform the following actions depending on the UE access class X.

  Case 1) The UE access class X is barred,

  UE shall:

  - not perform a PS attach procedure.
  - stay in the current serving cell.
  - apply normal cell reselection process.

Case 2) The UE access class X is granted or serving cell is changed,

UE shall:

- initiate PS attach procedure..

12.2.1.7 PS attach / abnormal cases / change of cell into new routing area

12.2.1.7.1 Definition

12.2.1.7.2 Conformance requirement

When a change of cell into a new routing area is performed before ATTACH ACCEPT message is received by the UE, the UE shall abort the PS attach procedure and re-initiate it immediately.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.7.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.7.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The ATTACH ACCEPT message is delayed from the SS. The UE performs a cell reselection to a cell in a new routing area. The UE shall re-initiate a PS attach procedure in the new routing area.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		SS		No response to the ATTACH REQUEST message is given by the SS.
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the UE.
7	UE			The UE automatically re-initiates the attach in the new cell.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
9	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-4
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.7.5 Test requirements

UE shall:

- abort a PS attach procedure when a change of cell into a new routing area is performed before ATTACH ACCEPT or ATTACH REJECT message is received by the UE.
- re-initiate a PS attach procedure immediately with new information elements.

12.2.1.8 PS attach / abnormal cases / power off

12.2.1.8.1 Definition

12.2.1.8.2 Conformance requirement

When power is switched off before ATTACH ACCEPT message is received by the UE, the UE shall abort the PS attach procedure and perform a PS detach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.

12.2.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.8.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE is switched off after initiating an attach procedure. A PS detach is automatically performed by the UE before power is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 7.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS			No response to the ATTACH REQUEST message is given by the SS.
5	UE			The UE is powered off and initiates a PS detach (with power off) by
6	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
7	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 6.

Specific message contents

None.

12.2.1.8.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

When power is switched off before ATTACH ACCEPT message is received,

UE shall:

- abort the PS attach procedure and perform the PS detach procedure.

12.2.1.9 PS attach / abnormal cases / PS detach procedure collision

12.2.1.9.1 Definition

12.2.1.9.2 Conformance requirement

1) When a DETACH REQUEST message is received by the UE (any cause except re-attach) while waiting for an ATTACH ACCEPT message, the UE shall terminate the PS attach procedure and continue with the PS detach procedure.

2) When a DETACH REQUEST message is received by the UE (cause re-attach) while waiting for an ATTACH ACCEPT message, the UE shall ignore the PS detach procedure and continue with the PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS does not answer the PS attach procedure, but initiates a PS detach procedure (any cause except re-attach). The UE shall terminate the PS attach procedure and continue with the PS detach procedure**.**

The UE initiates a PS attach procedure. The SS does not answer the PS attach procedure, but initiates a PS detach procedure (cause re-attach). The UE shall ignore the PS detach procedure and continue with the PS attach.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	<-		DETACH REQUEST	Detach type = 're-attach not required'
6	->		DETACH ACCEPT	
7	UE			The UE initiates the attach procedure by MMI or AT command.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
9	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 're-attach required'
11	UE			The UE ignores the DETACH REQUEST message and continue with the attach procedure.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.9.5 Test requirements

UE shall:

initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

Case1) GMM cause is not re-attach

When a DETACH REQUEST message is received by the UE while waiting for an ATTACH ACCEPT message,

UE shall:

- terminate the PS attach procedure and continue with the PS detach procedure.

Case2) GMM cause is re-attach

When a DETACH REQUEST message is received by the UE while waiting for an ATTACH ACCEPT message,

UE shall:

- ignore the PS detach procedure and continue with the PS attach procedure.

12.2.2 Combined PS attach

12.2.2.1 Combined PS attach / PS and non-PS attach accepted

12.2.2.1.1 Definition

12.2.2.1.2 Conformance requirement

1) If the network accepts the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the UE shall acknowledge the P-TMSI and continue communication with the P-TMSI.

2) If the network accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

3) If the network accepts the combined PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the previously used P-TMSI, the UE shall continue communication with the previously used P-TMSI.

4) If the network accepts the combined PS attach procedure and determines that IMSI shall be used in CS operations, the UE shall continue communication with the IMSI for CS operations.

5) If the network accepts the combined PS attach procedure and determines that a TMSI shall be used in CS operations, the UE shall continue communication with the TMSI for CS operations.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.1.3 Test purpose

To test the behaviour of the UE if the network accepts the PS attach procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is allocated;

2) P-TMSI / P-TMSI signature is reallocated;

3) Old P-TMSI / P-TMSI signature is not changed;

4) Mobile terminating CS call is allowed with IMSI;

5) Mobile terminating CS call is not allowed with TMSI.

12.2.2.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the IMSI is used.

2) The UE is CS paged in order to verify that the IMSI is used for CS calls.

3) The UE is PS paged in order to verify that the new P-TMSI is used for PS services.

4) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS allocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI and a new TMSI. The UE acknowledge the P-TMSI and the TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the new TMSI is used. The UE is CS paged in order to verify that the new TMSI is used for CS services.

5) The UE is PS paged in order to verify that the new P-TMSI is used for PS services. The UE will not answer signalling addressed to the old P-TMSI.

6) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the previously used P-TMSI.

7) The UE is PS paged in order to verify that the previously used P-TMSI is used for PS services.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity =IMSI Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
7	->		RRC CONNECTION REQUEST	
8	<-		RRC CONNECTION SETUP	
9	->		RRC CONNECTION SETUP COMPLETE	
10	->		PAGING RESPONSE	Mobile identity = IMSI
11	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
12	->		RRC CONNECTION RELEASE COMPLETE	
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services
13a	->		RRC CONNECTION REQUEST	
13b	<-		RRC CONNECTION SETUP	
13c	->		RRC CONNECTION SETUP COMPLETE	
14	->		SERVICE REQUEST	service type = "paging response"
14a	<-		RRC CONNECTION RELEASE	
14b	->		RRC CONNECTION RELEASE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
17	UE			The UE is powered up or switched on and initiates an attach (see ICS).
18	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature TMSI status = no valid TMSI available Routing area identity = RAI-1
19	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
20	->		ATTACH COMPLETE	
21	<-		GMM INFORMATION	
21b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
22	<-		PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services.
23	->		RRC CONNECTION REQUEST	
24	<-		RRC CONNECTION SETUP	
25	->		RRC CONNECTION SETUP COMPLETE	
26	->		PAGING RESPONSE	Mobile identity = TMSI-1

Step	Direction		Message	Comments
	UE	SS		
27		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
28		->	RRC CONNECTION RELEASE COMPLETE	
29		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services
29a		->	RRC CONNECTION REQUEST	
29b		<-	RRC CONNECTION SETUP	
29c		->	RRC CONNECTION SETUP COMPLETE	
30		->	SERVICE REQUEST	service type = "paging response"
30a		<-	RRC CONNECTION RELEASE	
30b		->	RRC CONNECTION RELEASE COMPLETE	
31		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services
32	UE			No response from the UE to the request. This is checked for 10 seconds.
33	UE			The UE is switched off or power is removed (see ICS).
34		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
35	UE			The UE is powered up or switched on and initiates an attach (see ICS).
36		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
37		<-	ATTACH ACCEPT	No new mobile identity assigned. TMSI and P-TMSI not included. Attach result = 'Combined PS / IMSI attached' P-TMSI-3 signature Routing area identity = RAI-1
38		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services
38a		->	RRC CONNECTION REQUEST	
38b		<-	RRC CONNECTION SETUP	
38c		->	RRC CONNECTION SETUP COMPLETE	
39		->	SERVICE REQUEST	service type = "paging response"
39a		<-	RRC CONNECTION RELEASE	
39b		->	RRC CONNECTION RELEASE COMPLETE	
40	UE			The UE is switched off or power is removed (see ICS).
41		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

Case 1) SS accept the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI.

UE shall

- acknowledge the P-TMSI and continue communication with the P-TMSI.

Case 2) SS accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI.

UE shall:

- acknowledge the new P-TMSI and continue communication with the new P-TMSI.

Case 3) SS accepts the combined PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the previously used P-TMSI.

UE shall:

- continue communication with the previously used P-TMSI.

Case 4) SS accepts the combined PS attach procedure and determines that IMSI shall be used in CS operations.

UE shall:

- continue communication with the IMSI for CS operations.

Case 5) SS accepts the combined PS attach procedure and determines that a TMSI shall be used in CS operations.

UE shall:

- continue communication with the TMSI for CS operations.

12.2.2.2 Combined PS attach / PS only attach accepted

12.2.2.2.1 Definition

12.2.2.2.2 Conformance requirement

1) If the network accepts the combined PS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the UE the User Equipment shall delete the stored TMSI, LAI and CKSN. The User Equipment shall consider USIM invalid for non-PS services until power is switched off or USIM is removed.

2) If the network accepts the combined PS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the UE, an UE operation mode A UE may perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.2.3 Test purpose

Test propose1

To test the behaviour of the UE if the network accepts the PS attach procedure with indication PS only, GMM cause 'IMSI unknown in HLR'.

Test porpose2

To test the behaviour of the UE if the network accepts the PS attach procedure with indication PS only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

12.2.2.2.4 Method of test

12.2.2.2.4.1 Test porpose1

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication UE - SS is performed by the P-TMSI. CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature GMM cause = 'IMSI unknown in HLR'
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
7	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.2.2.4.2 Test porpose2

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Automatic MM IMSI attach procedure for UE operation mode A UE Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE sends an ATTACH REQUEST message. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. This procedure is repeated four times. An UE operation mode A UE may then perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. CS services are not possible as an IMSI attach procedure is not performed.

Expected Sequence

Dependent whether the option 'Automatic MM IMSI attach procedure for UE operation mode A UE' is supported or not, the steps 1-22 or 23-53 apply depending on manufacturer (see ICS).

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A and no automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
5	->		ATTACH COMPLETE	
7	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
10	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
11	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
12	SS			The SS verifies that the time between the requests are T3311
13	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
14	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
16	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
17	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
19	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'. Stop the sequence.
23	UE			Automatic MM IMSI attach procedure is indicated (see ICS).
24	UE			The UE is powered up or switched on and initiates an attach (see ICS).
25	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
26	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
28	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
29	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
31	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
32	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
33	SS			The SS verifies that the time between the requests are T3311

Step	Direction		Message	Comments
	UE	SS		
34	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
35	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
37	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
38	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
39	SS			The SS verifies that the time between the requests are T3311
40	UE			An automatic MM IMSI attach procedure is initiated.
41	->		RRC CONNECTION REQUEST	
42	<-		RRC CONNECTION SETUP	
43	->		RRC CONNECTION SETUP COMPLETE	
44	->		LOCATION UPDATING REQ	Location updating type = IMSI attach.
45	<-		LOCATION UPDATING ACC	The SS allocates a new TMSI.
46	->		TMSI REALLOCATION COMP	Location updating type = IMSI attach.
47	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
48	->		RRC CONNECTION RELEASE COMPLETE	
49	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
50	->		RRC CONNECTION REQUEST	
51	<-		RRC CONNECTION SETUP	
52	->		RRC CONNECTION SETUP COMPLETE	
53	->		PAGING RESPONSE	Mobile identity = TMSI-1
54	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
55	->		RRC CONNECTION RELEASE COMPLETE	
56	UE			The UE is switched off or power is removed (see ICS).
57	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.2.2.5 Test requirements

UE shall:

- initiate a Combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH ACCEPT message received from SS.
- perform the following actions depending on the GMM cause.

  Case1) GMM cause = 'IMSI unknown in HLR'

  UE shall

  - delete stored TMSI, LAI, and ciphering key sequence number.
  - consider USIM invalid for non-PS service until power is switching off or USIM is removed.

  Case2) GMM cause = 'MSC temporarily not reachable' or 'Network failure' or 'Congestion',

  UE shall:

  - stop the timer T3310(if running), and shall increment the routing area update attempt counter.
  - perform the following actions depending on the conditions described below.

    Case 2-1) the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell and the GMM update status is equal to GU1 UPDATED:

    UE shall

    - keep the GMM update status GU1 UPDATED.
    - change state to GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.
    - start timer T3311. When timer T3311 expires, the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach" is triggered again.

    Case 2-2) the routing area updating attempt counter is greater than or equal to 5

    UE shall

    - start timer T3302 and change state to GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM

12.2.2.3 Combined PS attach / PS attach while IMSI attach

12.2.2.3.1 Definition

12.2.2.3.2 Conformance requirement

If the PS UE is already attached for non-PS services by the MM specific attach procedure, but wants to perform an attach for PS services, the combined PS attach procedure is performed.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.3.3 Test purpose

To test the behaviour of the UE if PS attach performed while IMSI attached.

12.2.2.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I. ATT flag is set.

User Equipment:

The UE has a valid TMSI-1, P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE is forced to register for CS services but not to PS services. The SS verifies that the UE does not respond to paging messages for PS domain. Then the UE is triggered to perform the PS attach procedure and the SS verifies that it responds to PS paging messages.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS) and configured not to perform an automatic PS attach at switch on.
2	UE			The UE is powered up or switched on. No PS attach is performed (see ICS).
3			Registration on CS	See TS 34.108 Location updating type = IMSI attach. The SS allocates TMSI-1
4		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
5	UE			No response from the UE to the request. This is checked for 10 seconds.
6	UE			The UE is triggered to perform a PS attach.
7		->	ATTACH REQUEST	Attach type = 'PS attach while IMSI attached' or 'Combined PS / IMSI attached' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
8		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' No new mobile identity assigned. TMSI and P-TMSI not included P-TMSI-2 signature Routing area identity = RAI-1
9		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10		->	RRC CONNECTION REQUEST	
11		<-	RRC CONNECTION SETUP	
12		->	RRC CONNECTION SETUP COMPLETE	
13		->	SERVICE REQUEST	service type = "paging response"
14		<-	RRC CONNECTION RELEASE	
15		->	RRC CONNECTION RELEASE COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.3.5 Test requirements

UE is already attached for non-PS service with the MM specific attach procedure.

UE shall:

- perform the combined PS attach procedure when UE is requested to attach for PS services.

12.2.2.4 Combined PS attach / rejected / IMSI invalid / illegal ME

12.2.2.4.1 Definition

12.2.2.4.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall delete the stored TMSI, LAI, CSKN, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

3) The UE in the UE operation mode A shall perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.4.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure of the UE with the cause 'Illegal ME'.

12.2.2.4.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI-1, P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Illegal ME'. The SS checks that the UE does not perform PS attach in the same or another PLMN. PS services are not possible as the USIM is blocked for PS services. An UE operation mode A UE shall perform an MM IMSI attach.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause 'Illegal ME'.
6	UE			An automatic MM IMSI attach procedure is initiated.
7	UE		Registration on CS	See TS.34.108 Location updating type = IMSI attach. The SS allocates TMSI-2.
8	<-		PAGING TYPE1	Mobile identity = P-TMSI-1Paging order is for PS services
9	UE			No response from the UE to the request. This is checked for 10 seconds.
10	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
11	->		RRC CONNECTION REQUEST	
12	->		RRC CONNECTION SETUP	
13	<-		RRC CONNECTION SETUP COMPLETE	
14	->		PAGING RESPONSE	Mobile identity = TMSI-2
15	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signaling link.
16	->		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell B.
17		SS		The SS deactivates cell A and activates cell B.
18	UE			Cell B is preferred by the UE.
19	UE			Step 20 is only performed for non-auto attach UE. A location updating procedure is initiated.
20	UE		Registration on CS	See TS34.108 Location updating type = normal. The SS allocates TMSI-1.
21	UE			UE initiates an attach automatically (see PICS), by MMI or AT commands.
22			PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
23			RRC CONNECTION REQUEST	
24			RRC CONNECTION SETUP	
25			RRC CONNECTION SETUP COMPLETE	
26			PAGING RESPONSE	Mobile identity = TMSI-1
27			RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signaling link.
28			RRC CONNECTION RELEASE COMPLETE	
29	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is forPS services.
30	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

Step	Direction		Message	Comments
	UE	SS		
31	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
32	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
33	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
34	->		ATTACH COMPLETE	
35	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
36	->		RRC CONNECTION REQUEST	
37	<-		RRC CONNECTION SETUP	
38	->		RRC CONNECTION SETUP COMPLETE	
39	->		PAGING RESPONSE	Mobile identity = TMSI-2
40	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
41	->		RRC CONNECTION RELEASE COMPLETE	
42	UE			The UE is switched off or power is removed (see ICS).
43	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.4.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.
- perform an MM IMSI attach procedure, if the UE is PS class A.

12.2.2.5 Combined PS attach / rejected / PS services and non-PS services not allowed

12.2.2.5.1 Definition

12.2.2.5.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services and non-PS services not allowed', the User Equipment shall consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services and non-PS services not allowed', the User Equipment shall delete the stored TMSI, LAI, CSKN, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.5.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure of the UE with the cause 'PS services and non-PS services not allowed'.

12.2.2.5.4 Method of test

Initial condition

System Simulator:

- Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
  Both cells are operating in network operation mode I.

User Equipment:

- The UE has a valid TMSI-1, P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

- Support of PS service Yes/No
  UE operation mode A Yes/No
  Switch off on button Yes/No
  Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PS services and non-PS services not allowed'. The SS checks that the UE does not perform PS attach in the same or another PLMN. CS services are not possible as the USIM is blocked for CS services. PS services are not possible as the USIM is blocked for PS services.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH REJECT	GMM cause 'PS services and non-PS services not allowed'
6	UE			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds).
7		<-	PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS Paging.
10		->		No response from the UE to the request. This is checked for 10 seconds
11	UE			Cell A is deactivated and cell B is activated.
12			(void)	
13	UE			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds).
14		<-	PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
15	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
16		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
17	UE			No response from the UE to the request. This is checked for 10seconds.
18	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
19	UE			The UE is powered up or switched.
20	UE		Registration on CS	See TS 34.108 Location Update Procedure initiated from the UE. Parameter mobile identity is IMSI.
21	UE			UE initiates an attach automatically (see PICS), by MMI or AT commands.
22		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
23		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
24		->	ATTACH COMPLETE	
25		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
26		->	RRC CONNECTION REQUEST	
27		<-	RRC CONNECTION SETUP	
28		->	RRC CONNECTION SETUP COMPLETE	
29		->	PAGING RESPONSE	Mobile identity = TMSI-1
30		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.

Step	Direction		Message	Comments
	UE	SS		
31	->		RRC CONNECTION RELEASE COMPLETE	
32	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services.
33	->		RRC CONNECTION REQUEST	
34	<-		RRC CONNECTION SETUP	
35	->		RRC CONNECTION SETUP COMPLETE	
36	->		SERVICE REQUEST	Service type = "paging response"
37	<-		RRC CONNECTION RELEASE	
38	->		RRC CONNECTION RELEASE COMPLETE	
39	UE			The UE is switched off or power is removed (see ICS).
40	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.5.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.

- consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.

12.2.2.6 Combined PS attach / rejected / PS services not allowed

12.2.2.6.1 Definition

12.2.2.6.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
3) A PS class AUE shall perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.6.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS services not allowed'.

12.2.2.6.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal attach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach. PS services are not possible. An UE operation mode A UE shall perform an MM IMSI attach.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	GMM cause 'PS services not allowed'
5	UE			An automatic MM IMSI attach procedure is initiated.
6	UE		Registration on CS	See TS 34.108 Location updating type = IMSI attach. The SS allocates TMSI-2.
7	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
8	->		RRC CONNECTION REQUEST	
9	<-		RRC CONNECTION SETUP	
10	->		RRC CONNECTION SETUP COMPLETE	
11	->		PAGING RESPONSE	Mobile identity = TMSI-2
12	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signaling link.
13	->		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell B.
14		SS		The SS deactivates cell A and activates cell B.
15	UE			Cell B is preferred by the UE.
16	UE			A location updating procedure is initiated.
17	UE		Registration on CS	See TS 34.108 Location updating type = normal. The SS allocates TMSI-1.
18	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
19	->		RRC CONNECTION REQUEST	
20	<-		RRC CONNECTION SETUP	
21	->		RRC CONNECTION SETUP COMPLETE	
22	->		PAGING RESPONSE	Mobile identity = TMSI-1
23	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
24	->		RRC CONNECTION RELEASE COMPLETE	
25	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services
26	UE			No response from the UE to the request. This is checked for 10seconds.
27	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
28	UE			The UE is powered up or switched on and initiates an attach (see ICS).
29	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
30	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
31	->		ATTACH COMPLETE	
32	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.

Step	Direction		Message	Comments
	UE	SS		
33	->		RRC CONNECTION REQUEST	
34	<-		RRC CONNECTION SETUP	
35	->		RRC CONNECTION SETUP COMPLETE	
36	->		PAGING RESPONSE	Mobile identity = TMSI-2
37	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
38	->		RRC CONNECTION RELEASE COMPLETE	
39	UE			The UE is switched off or power is removed (see ICS).
40	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.6.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- consider USIM invalid for PS services until power is switched off or USIM is removed.
- perform an MM IMSI attach procedure, if the UE is PS class A.

12.2.2.7a Combined PS attach / rejected / location area not allowed

12.2.2.7a.1 Definition

12.2.2.7a.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   2.1 perform combined PS attach when a new location area is entered.

   2.2 delete the list of forbidden LAs when power is switched off.

Reference

3GPP TS 24.008 clauses 4.7.3.2.

12.2.2.7a.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.2.2.7a.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3).
All cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined PS attach with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH REJECT	GMM cause 'Location Area not allowed'
6	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
7		<-	PAGING TYPE1	Mobile identity = TMSI Paging order is for CS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging oder is for PS services.
10		->		No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell B.
11		SS		The SS deactivates cell A and activates cell B.
12	UE			Cell B is preferred by the UE.
13	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
14	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
15		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
16	UE			No response from the UE to the request. This is checked for 10seconds.
17	UE			The UE initiates an attach by MMI or AT command.
18				No attach is performed by the UE. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
19		SS		The SS deactivates cell B and activates cell C.
20	UE			Cell C is preferred by the UE.
21		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
22		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-3
23		->	ATTACH COMPLETE	
24		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
25		->	RRC CONNECTION REQUEST	
26		<-	RRC CONNECTION SETUP	
27		->	RRC CONNECTION SETUP COMPLETE	
28		->	PAGING RESPONSE	Mobile identity = TMSI-1
29		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.

Step	Direction		Message	Comments
	UE	SS		
30	->		RRC CONNECTION RELEASE COMPLETE	
31	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
32	->		RRC CONNECTION REQUEST	
33	<-		RRC CONNECTION SETUP	
34	->		RRC CONNECTION SETUP COMPLETE	
35	->		SERVICE REQUEST	Service type = "paging response"
36	<-		RRC CONNECTION RELEASE	
37	->		RRC CONNECTION RELEASE COMPLETE	
38	UE			The UE is switched off or power is removed (see ICS).
39	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
				The following messages are sent and shall be received on cell B.
40	UE			The SS deactivates cell C and activates cell B. Cell B is preferred by the UE.
41	UE			The UE is powered up or switched on and initiates an attach (see ICS).
42				Step 43 is only performed for non-auto attach UE.
43	UE		Registration on CS	See TS 34.108
44	UE			UE initiates an attach automatically (see PICS), by MMI or AT commands.
45	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
46	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
47	->		ATTACH COMPLETE	
48	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
49	->		RRC CONNECTION REQUEST	
50	<-		RRC CONNECTION SETUP	
51	->		RRC CONNECTION SETUP COMPLETE	
52	->		PAGING RESPONSE	Mobile identity = TMSI-2
53	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
54	->		RRC CONNECTION RELEASE COMPLETE	
55	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
56	->		RRC CONNECTION REQUEST	
57	<-		RRC CONNECTION SETUP	
58	->		RRC CONNECTION SETUP COMPLETE	
59	->		SERVICE REQUEST	service type = "paging response"
60	<-		RRC CONNECTION RELEASE	
61	->		RRC CONNECTION RELEASE COMPLETE	
62	UE			The UE is switched off or power is removed (see ICS).
63	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.7a.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- perform the following action depending on UE location.

When in the same location area, UE shall

- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- delete any stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- store the LAI or the PLMN identity in the appropriate forbidden list("forbidden location areas for regional provision of service").

When a new location area is entered, UE shall

- perform combined PS attach when UE entered a new location area.
- delete the list of forbidden LAs when power is switched off.

12.2.2.7b Combined PS attach / rejected / No Suitable Cells In Location Area

12.2.2.7b.1 Definition

12.2.2.7b.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for roaming'.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   2.1 search for a suitable cell in a different location area on the same PLMN.

Reference

3GPP TS 24.008 clauses 4.7.3.2.

12.2.2.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure with the cause 'No Suitable Cells In Location Area'.

12.2.2.7b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

User Equipment:

The UE has valid TMSI, P-TMSI, P-TMSI signature and RAI

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform combined PS attach procedure in that cell

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The SS activates three cells simultaneously. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	GMM cause = 'No Suitable Cells In Location Area'
5	SS			The SS initiates the RRC connection release. The following message are sent and shall be received on cell B.
6	UE			The UE initiates an attach automatically, by MMI or by AT command.
7	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
8	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-•
9	->		ATTACH COMPLETE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.2.7b.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected sequence when the UE is powered up or switched on.
- delete any stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- store the LAI or the PLMN identity in the appropriate forbidden list("forbidden location areas for roaming ").
- search for a suitable cell in a different location area on the same PLMN.

12.2.2.8 Combined PS attach / abnormal cases / attempt counter check / miscellaneous reject causes

12.2.2.8.1 Definition

12.2.2.8.2 Conformance requirement

1) When a combined PS attach procedure is rejected with the attempt counter less than five, the User Equipment shall repeat the combined PS attach procedure after T3311 timeout.
2) When a combined PS attach procedure is rejected with the attempt counter five, the User Equipment shall delete the stored TMSI, LAI, CKSN, P-TMSI, P-TMSI signature, PS CKSN and RAI and start T3302.
3) When the T3302 expire, a new combined PS attach procedure shall be initiated.

GMM cause codes that can be selected are:
'IMSI unknown in HLR'
'IMEI not accepted'
'UE identity cannot be derived by the network'
'Network failure'
'Congestion'
'retry upon entry into a new cell'
'Semantically incorrect message'
'Invalid mandatory information'
'Message type non-existent or not implemented'
'Message type not compatible with the protocol state'
'Information element non-existent or not implemented'
'Conditional IE error'
'Message not compatible with the protocol state'
'Protocol error, unspecified'

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.8.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.2.2.8.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a combined PS attach procedure (attempt counter zero).

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure (attempt counter one) after T3311 expires.

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure (attempt counter two) after T3311 expires.

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure (attempt counter three) after T3311 expires.

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure (attempt counter four) after T3311 expires.

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure with attempt counter five (after T3311 expires).

The SS rejects the attach with a random cause code. The UE shall not perform a new successful attach procedure after 15 seconds.

The UE initiates a combined PS attach procedure with attempt counter zero after T3302 expires without P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 10 minutes.

T3311; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	Arbitrary chosen GMM cause T3302 with value 10 min.
5	SS			The SS verifies that the time between the attach requests is T3311
6	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
7	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
8	SS			The SS verifies that the time between the attach requests is T3311
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
10	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
11	SS			The SS verifies that the time between the attach requests is T3311
12	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
13	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
14	SS			The SS verifies that the time between the attach requests is T3311
15	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
16	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
17	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
18	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
19	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
20	<-		PAGING TYPE1	Paging order is for PS services. Mobile identity = P-TMSI-1
21	UE			No response from the UE to the request. This is checked for 10seconds.
22	SS			The SS verifies that the UE does not attempt to attach for T3302 .
23	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
24	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity P-TMSI-1 P-TMSI signature Mobile identity = TMSI-1 Routing area identity = RAI-1
25	->		ATTACH COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
26		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services..
27		->	RRC CONNECTION REQUEST	
28		<-	RRC CONNECTION SETUP	
29		->	RRC CONNECTION SETUP COMPLETE	
30		->	PAGING RESPONSE	Mobile identity = TMSI-1
31		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
32		->	RRC CONNECTION RELEASE COMPLETE	
33		<-	PAGING TYPE1	Mobile identity = P-TMSI-1
33a		->	RRC CONNECTION REQUEST	
33b		<-	RRC CONNECTION SETUP	
33c		->	RRC CONNECTION SETUP COMPLETE	
34		->	SERVICE REQUEST	Service type = "paging response"
34a		<-	RRC CONNECTION RELEASE	
34b		->	RRC CONNECTION RELEASE COMPLETE	
35	UE			The UE is switched off or power is removed (see ICS).
36		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.8.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- perform the following actions depending on the conditions described below.

  Case1) A combined PS attach procedure is rejected with the attempt counter less than five

  UE shall:

  - repeat the combine PS attach procedure after the timer T3311 timeout.

  Case2) A combined PS attach procedure is rejected with the attempt counter five

  UE shall:

  - delete the stored TMSI, LAI, CKSN, P-TMSI, P-TMSI signature, PS CKSN and RAI and
  - start the timer T3302.

  Case3) The T3302 expires

  UE shall:

  - re-initiate a new combined PS attach procedure.

12.2.2.9 Combined PS attach / abnormal cases / PS detach procedure collision

12.2.2.9.1 Definition

12.2.2.9.2 Conformance requirement

1) When a DETACH REQUEST message is received by the UE (any cause except re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the UE shall terminate the combined PS attach procedure and continue with the combined PS detach procedure.

2) When a DETACH REQUEST message is received by the UE (cause re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the UE shall ignore the combined PS detach procedure and continue with the combined PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.2.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has valid TMSI, P-TMSI, P-TMSI signature and RAI. UE is Idle Updated.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a combined PS attach procedure. The SS does not answer the combined PS attach procedure, but initiates a combined PS detach procedure (any cause except re-attach). The UE shall terminate the combined PS attach procedure and continue with the combined PS detach procedure.

The UE initiates a combined PS attach procedure. The SS does not answer the combined PS attach procedure, but initiates a combined PS detach procedure (cause re-attach). The UE shall ignore the combined PS detach procedure and continue with the combined PS attach. CS services are also possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	<-		DETACH REQUEST	Detach type = 're-attach not required'
6	->		DETACH ACCEPT	
7			(void)	
8			(void)	
9	UE			The UE is attached by MMI or AT command
10	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
12	<-		DETACH REQUEST	Detach type = 're-attach required'
13	UE			The UE ignores the DETACH REQUEST message and continue with the attach procedure
14	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-1
15	->		ATTACH COMPLETE	
16	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
17	->		RRC CONNECTION REQUEST	
18	<-		RRC CONNECTION SETUP	
19	->		RRC CONNECTION SETUP COMPLETE	
20	->		PAGING RESPONSE	Mobile identity = TMSI-2
21	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
22	->		RRC CONNECTION RELEASE COMPLETE	
23	<-		PAGING TYPE1	Paging order is for PS services. Mobile identity = P-TMSI-2
23a	->		RRC CONNECTION REQUEST	
23b	<-		RRC CONNECTION SETUP	
23c	->		RRC CONNECTION SETUP COMPLETE	
24	->		SERVICE REQUEST	Service type = "paging response"
24a	<-		RRC CONNECTION RELEASE	
24b	->		RRC CONNECTION RELEASE COMPLETE	
25	UE			The UE is switched off or power is removed (see ICS).
26	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.9.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- perform the following actions depending on the Detach type described below.

  Case1) Detach type is not re-attach

  UE shall:

  - terminate the combined PS attach procedure.
  - continue with the combined PS detach procedure.

  Case2) Detach type is re-attach

  UE shall:

  - ignore the combined PS detach procedure.
  - continue with the combined PS attach procedure.

12.3 PS detach procedure

12.3.1 UE initiated PS detach procedure

12.3.1.1 PS detach / power off / accepted

12.3.1.1.1 Definition

12.3.1.1.2 Conformance requirement

The UE detaches the IMSI for PS services if the UE is switched off.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.1.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No

Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The UE sends a DETACH REQUEST message to the SS.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 8.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off (see ICS).
7	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
8	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 2 to step 7.

Specific message contents

None.

12.3.1.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, PS detach'.

12.3.1.2 PS detach / accepted

12.3.1.2.1 Definition

12.3.1.2.2 Conformance requirement

The UE detaches the IMSI for PS services if the UE is ordered to do so with MMI or AT commands.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.2.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure and activates a PDP context.

The UE sends a DETACH REQUEST message to the SS.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 11.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
5			(void)	
6	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11			(void)	
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 10.

Specific message contents

None.

12.3.1.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- sends the DETACH REQUEST message(without power off) to SS.
- start timer T3321.

When UE receives the DETACH ACCEPT message from SS before the timer T3321 is not expired, UE shall:

- stop timer T3321.

12.3.1.3 PS detach / abnormal cases / attempt counter check / procedure timeout

12.3.1.3.1 Definition

12.3.1.3.2 Conformance requirement

1) When a T3321 timeout has occurred during a PS detach procedure with the attempt counter less than five, the User Equipment shall repeat the PS detach procedure.
2) When a T3321 timeout has occurred during a PS detach procedure with the attempt counter five, the User Equipment shall not repeat the procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.3.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.3.1.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The UE initiates a PS detach procedure (attempt counter zero). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter one) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter two) after T3321expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter three) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter four) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure with attempt counter five (after T3321expires). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

At T3321 timeout in the UE, the UE then deletes the logical link since the retransmissions have been repeated four times.

The UE performs a new PS attach procedure.

T3321; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step ~~22~~25.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
5	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
6	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
7	SS			No response is given from the SS.
8	SS			The SS verifies that the time between the detach requests is 15 seconds
9	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
10	SS			No response is given from the SS.
11	SS			The SS verifies that the time between the detach requests is 15 seconds
12	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
13	SS			No response is given from the SS.
14	SS			The SS verifies that the time between the detach requests is 15 seconds
15	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
16	SS			No response is given from the SS.
17	SS			The SS verifies that the time between the detach requests is 15 seconds
18	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
19	SS			No response is given from the SS within 40 seconds and SS verifies that the UE will not send a DETACH REQUEST again.
20	UE			Initialte a PS attach
21	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 ~~P-TMSI-1 signature~~ Routing area identity = RAI-1
22	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
23				UE is switched off or power is removed (see ICS)
24	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
25	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 24.

Specific message contents

None.

12.3.1.3.5 Test requirements

UE shall:

- initiate a PS attaché procedure with the information elements specified in the above Expected Sequence when the UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- initiate a PS detach procedure(without power off).
- start timer T3321.

When a T3221 expires with the attempt counter less than five, UE shall:

- initiate a new PS detach procedure.
- increment the attempt counter.
- re-start timer T3321.

When a T3221 expires with the attempt counter five, UE shall:

- not repeat the procedure.

12.3.1.4 PS detach / abnormal cases / GMM common procedure collision

12.3.1.4.1 Definition

12.3.1.4.2 Conformance requirement

When any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the UE while waiting for a DETACH ACCEPT message with detach cause different from "power off", the UE shall ignore the GMM common message.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.4.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach.

The UE initiates a PS detach. The SS initiates a P-TMSI REALLOCATION COMMAND message, a GMM STATUS message and a GMM INFORMATION message. The UE shall ignore the GMM common messages and continue with the PS detach procedure.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
8	SS			The SS sends a P-TMSI REALLOCATION COMMAND message
9	<-		P-TMSI REALLOCATION COMMAND	
10	UE			The UE ignores the message.
11	SS			The SS sends a GMM STATUS message
12	<-		GMM STATUS	
13	UE			The UE ignores the message.
14	SS			The SS sends a GMM INFORMATION message
15	<-		GMM INFORMATION	
16	UE			The UE ignores the message or if GMM INFORMATION message not implemented, sends a GMM STATUS with GMM Cause 'Message type non-existent or not implemented'.
17	<-		DETACH ACCEPT	The SS responds to the DETACH REQUEST
18	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
19	UE			No response from the UE to the request. This is checked for 10 seconds.

Specific message contents

None.

12.3.1.4.5 Test requirements

UE shall:

- initiate a PS attaché procedure with the information elements specified in the above Expected Sequence when the UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- initiate a PS detach procedure(without power off).

When any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the UE while waiting for a DETACH ACCEPT message with detach cause different from "power off, UE shall: .

- ignore any of the GMM common.

12.3.1.5 PS detach / power off / accepted

12.3.1.5.1 Definition

12.3.1.5.2 Conformance requirement

The UE detach the IMSI for PS and non-PS services.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.5.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE sends a DETACH REQUEST message to the SS. The UE then deletes the logical link.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off (see ICS).
7	->		DETACH REQUEST	Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.1.5.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, combined PS / IMSI detach' after the PS attach procedure is completed.

12.3.1.6 PS detach / accepted / PS/IMSI detach

12.3.1.6.1 Definition

12.3.1.6.2 Conformance requirement

The UE detach the IMSI for PS and non-PS services.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.6.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.6.4 Method of test

Initial condition

System Simulator:

- One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

- Support of PS service Yes/No
  UE operation mode A Yes/No
  Switch off on button Yes/No
  Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE sends a DETACH REQUEST message to the SS. When the UE receives the DETACH ACCEPT, the UE then deletes the logical link.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A(see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
12	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

Specific message contents

None.

12.3.1.6.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the combined PS attach procedure is completed, UE shall:

- sends the DETACH REQUEST message(UE not switched off) to SS.
- shall start timer T3321.

When the UE receive the DETACH ACCEPT message from SS before the timer T3321 is not expired, the UE shall:

- stop timer T3321.

12.3.1.7 PS detach / accepted / IMSI detach

12.3.1.7.1 Definition

12.3.1.7.2 Conformance requirement

The UE shall detach for CS services.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.7.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.7.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

- The UE has a valid IMSI.

Related ICS/IXIT statements

- Support of PS service Yes/No
  UE operation mode A Yes/No
  Switch off on button Yes/No
  Automatic PS attach procedure at switch on or power on Yes/No
  MMI controlled attach / detach procedures for non-PS services Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE performs an PS detach (for non-PS services).

CS services are not possible.

The UE attach for non-PS services by a routing area update procedure and CS services are again possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach for non-PS services (without power off) (see ICS).
7	->		DETACH REQUEST	Detach type = 'normal detach, IMSI detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
9a	->		RRC CONNECTION REQUEST	
9b	<-		RRC CONNECTION SETUP	
9c	->		RRC CONNECTION SETUP COMPLETE	
10	->		SERVICE REQUEST	service type = "paging response"
10a	<-		RRC CONNECTION RELEASE	
10b	->		RRC CONNECTION RELEASE COMPLETE	
11	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services. Paging order is for RRC connection.
12	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
13	UE			The UE initiates an attach for non-PS services by a RA update procedure (see ICS).
14	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating" P-TMSI-1 signature Routing area identity = RAI-1
15	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated" Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
16	->		ROUTING AREA UPDATE COMPLETE	
17	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
18	->		RRC CONNECTION REQUEST	
19	<-		RRC CONNECTION SETUP	
20	->		RRC CONNECTION SETUP COMPLETE	
21	->		PAGING RESPONSE	Mobile identity = TMSI-1
22	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
23	->		RRC CONNECTION RELEASE COMPLETE	
24	UE			The UE is switched off or power is removed (see ICS).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.1.7.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the combined PS attach procedure is completed, UE shall:

- sends the DETACH REQUEST message(UE not switched off) to SS.
- start timer T3321.

When the UE receives the DETACH ACCEPT message from SS before the timer T3321 is not expired, the UE shall:

- stop timer T3321.

12.3.1.8 PS detach / abnormal cases / change of cell into new routing area

12.3.1.8.1 Definition

12.3.1.8.2 Conformance requirement

When a change of cell into a new routing area is performed before DETACH ACCEPT message is received by the UE, the UE shall abort the PS detach procedure and re-initiate it after the routing area update procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.8.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE initiates a PS detach procedure. The DETACH ACCEPT message is delayed from the SS.

The UE performs a cell update into a new routing area.

The UE shall re-initiate a PS detach procedure when the routing area update procedure is finished.

The UE deletes the logical link.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
8	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
9		SS		No response to the DETACH REQUEST message is given by the SS
				The following messages are sent and shall be received on cell B.
10		SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the UE.
11	UE			The UE performs a RA update in the new cell.
12	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
13	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
14	->		ROUTING AREA UPDATE COMPLETE	
15	->		DETACH REQUEST	The detach is automatically re-attempted. Detach type = 'normal detach, combined PS / IMSI detach'
16	->		DETACH ACCEPT	

Specific message contents

None.

12.3.1.8.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the combined PS attach procedure is completed, UE shall:

- initiate a PS detach.

When a change of cell into a new routing area is performed before DETACH ACCEPT message by the UE, UE shall:

- abort a PS detach procedure.
- re-initiate a PS detach procedure after successfully performing a routing area updating procedure.

12.3.1.9 PS detach / abnormal cases / PS detach procedure collision

12.3.1.9.1 Definition

12.3.1.9.2 Conformance requirement

When a DETACH REQUEST is received by the UE while waiting for a DETACH ACCEPT message, the UE shall answer the network initiated PS detach procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE initiates a PS detach. The SS does not answer the detach procedure, but initiates a detach procedure (cause re-attach not required). The UE shall continue with the network initiated detach procedure.

The UE deletes the logical link.

PS and CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A(see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5		->	ATTACH COMPLETE	
6	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
7		->	DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
8		<-	DETACH REQUEST	Detach type = 're-attach not required'
9		->	DETACH ACCEPT	The UE answers the network initiated detach.
10		<-	DETACH ACCEPT	The SS answers the UE initiated detach.
11		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
12	UE			No response from the UE to the request. This is checked for 10 seconds.
13		<-	PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services.
14	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

Specific message contents

None.

12.3.1.9.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the combined PS attach procedure is completed, UE shall:

- initiate a PS detach procedure.

When the UE receive DETACH REQUEST message from SS before UE initiated PS detach procedure has been completed, UE shall:

- send the DETACH ACCEPT message to SS

12.3.2 Network initiated PS detach procedure

12.3.2.1 PS detach / re-attach not required / accepted

12.3.2.1.1 Definition

12.3.2.1.2 Conformance requirement

The UE detach the IMSI for PS services.

Reference

3GPP TS 24.008 clause 4.7.4.2.

12.3.2.1.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.2.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The SS sends a DETACH REQUEST message to the UE. The UE then deletes the logical link.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS is set in network operation mode II.
2	UE			The UE is set in UE operation mode A or C (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6		->	ATTACH COMPLETE	
7	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
8		<-	DETACH REQUEST	Detach type = 're-attach not required'
9		->	DETACH ACCEPT	
10		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE1 (used for NW-mode II).
11	UE			No response from the UE to the request. This is checked for 10 seconds.

Specific message contents

None.

12.3.2.1.5 Test requirements

UE shall:

- initiate PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

When UE receives the DETACH REQUEST message from SS and the detach type IE indicates 're-attach not required', the UE shall

- deactivate the PDP context and the logical link(s).
- send DETACH ACCEPT message to SS.

12.3.2.2 PS detach / rejected / IMSI invalid / PS services not allowed

12.3.2.2.1 Definition

12.3.2.2.2 Conformance requirement

1) If the network performs a PS detach procedure with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
2) If the network performs a PS detach procedure with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.4.2.

12.3.2.2.3 Test purpose

To test the behaviour of the UE if the network orders a PS detach procedure with the cause 'PS services not allowed' (no valid PS-subscription for the IMSI).

12.3.2.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS performs a detach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach in another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step ~~19~~22.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6		->	ATTACH COMPLETE	
7		<-	DETACH REQUEST	Detach type = 're-attach not required' Cause = 'PS services not allowed'
8		->	DETACH ACCEPT	
				The following messages are sent and shall be received on cell B.
9		SS		The SS deactivates cell A and activates cell B.
10	UE			Cell B is preferred by the UE. Step 11 is only performed for UE Operation Mode A.
11	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
12				The UE initiates an attach automatically (see PICS), by MMI or AT commands.
13	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
14	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
15	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
16		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
17		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
18		->	ATTACH COMPLETE	
19	UE			The UE is switched off or power is removed (see ICS).
20		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
21				The SS deactivates cell B and activates cell A.
22	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 18.

Specific message contents

None.

12.3.2.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the completion of the PS attach procedure, and when UE receives the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'PS services not allowed') from SS, UE shall:

- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- consider the USIM as invalid for PS service until power is switched off or USIM is removed.

12.3.2.3 PS detach / IMSI detach / accepted

12.3.2.3.1 Definition

12.3.2.3.2 Conformance requirement

The UE detach the IMSI for PS services.

Reference

3GPP TS 24.008 clause 4.7.4.2.

12.3.2.3.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.2.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The SS sends a DETACH REQUEST message to the UE. The UE then performs an IMSI detach (detach for non-PS services).

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

The UE attach for non-PS services by a routing area update procedure. Both PS and CS services are possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	SS			The SS initiates a detach for non-PS services.
7	<-		DETACH REQUEST	Detach type = 'IMSI detach'
8	->		DETACH ACCEPT	
9	UE			The UE initiates an attach for non-PS services (see ICS).
10	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
11	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updating' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
12	->		ROUTING AREA UPDATE COMPLETE	
13	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
14	->		RRC CONNECTION REQUEST	
15	<-		RRC CONNECTION SETUP	
16	->		RRC CONNECTION SETUP COMPLETE	
17	->		PAGING RESPONSE	Mobile identity = TMSI-1
18	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
19	->		RRC CONNECTION RELEASE COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.3.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the completion of the PS attach procedure, UE shall:

- receive DETACH REQUEST message(Detach type = 'IMSI detach') from SS.
- not deactivate the PDP context.
- and send the DETACH ACCEPT message to SS.

12.3.2.4 PS detach / re-attach requested / accepted

12.3.2.4.1 Definition

12.3.2.4.2 Conformance requirement

The UE shall deactivate the logical link and re-activate it.

Reference

3GPP TS 24.008 clause 4.7.4.2.

12.3.2.4.3 Test purpose

To test the behaviour of the UE for the detach procedure in case automatic re-attach.

12.3.2.4.4 Method of test

Initial condition

System Simulator:

One cell in operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The SS sends a DETACH REQUEST message to the UE with cause re-attach. The UE then detaches for PS services. The UE automatically performs a new combined PS attach procedure (for PS and non-PS services) and PS and CS services are possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = TMSI-1 Routing area identity = RAI-1 No new P-TMSI and P-TMSI signature assigned
5	->		ATTACH COMPLETE	
6	SS			The SS initiates a detach with re-attach.
7	<-		DETACH REQUEST	Detach type = 're-attach required'
8	->		DETACH ACCEPT	
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = TMSI-1 Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
11	->		ATTACH COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
12a	->		RRC CONNECTION REQUEST	
12b	<-		RRC CONNECTION SETUP	
12c	->		RRC CONNECTION SETUP COMPLETE	
13	->		SERVICE REQUEST	service type = "paging response"
13a	<-		RRC CONNECTION RELEASE	
13b	->		RRC CONNECTION RELEASE COMPLETE	
14	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
15	->		RRC CONNECTION REQUEST	
16	<-		RRC CONNECTION SETUP	
17	->		RRC CONNECTION SETUP COMPLETE	
18	->		PAGING RESPONSE	Mobile identity = TMSI-1
19	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
20	->		RRC CONNECTION RELEASE COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.4.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the completion of the combined PS attach procedure, UE shall:

- deactivate the PDP context and the logical link(s).
- send DETACH ACCEPT message to SS.

After UE completed PS detach procedure, UE shall:

- initiate a combined PS attach procedure.

12.3.2.5 PS detach / rejected / location area not allowed

12.3.2.5.1 Definition

12.3.2.5.2 Conformance requirement

1) If the network performs a PS detach procedure with the cause 'location area not allowed' the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network performs a PS detach procedure with the cause 'location area not allowed' the User Equipment shall:

   2.1 perform combined PS attach when a new location area is entered.

   2.2 delete the list of forbidden LAs when power is switched off.

Reference

3GPP TS 24.008 clauses 4.7.4.2.

12.3.2.5.3 Test purpose

To test the behaviour of the UE if the network orders the PS detach procedure with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.3.2.5.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC2 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6, Not HPLMN).
All cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS orders a PS detach with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
6	->		ATTACH COMPLETE	
7	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause 'Location Area not allowed'
8	->		DETACH COMPLETE	
9	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
10	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
11	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
13	->			No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell B.
14		SS		The SS deactivates cell A and activates cell B.
15	UE			Cell B is preferred by the UE.
16	UE			The UE initiates an attach automatically, by MMI or by AT command.
17	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
18	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
19	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
21	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
22				No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell C.
23		SS		The SS deactivates cell B and activates cell C.
24	UE			Cell C is preferred by the UE. Step 25 is only performed for non-auto attach UE.
25	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI.
26	UE			The UE initiates an attach automatically (See ICS), by MMI or AT command.
27	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
28		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-6
29		->	ATTACH COMPLETE	
30		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
31		->	RRC CONNECTION REQUEST	
32		<-	RRC CONNECTION SETUP	
33		->	RRC CONNECTION SETUP COMPLETE	
34		->	PAGING RESPONSE	Mobile identity = TMSI-1
35		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
36		->	RRC CONNECTION RELEASE COMPLETE	
37		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
38		->	RRC CONNECTION REQUEST	
39		<-	RRC CONNECTION SETUP	
40		->	RRC CONNECTION SETUP COMPLETE	
41		->	SERVICE REQUEST	service type = "paging response"
42		<-	RRC CONNECTION RELEASE	
43		->	RRC CONNECTION RELEASE COMPLETE	
44	UE			The UE is switched off or power is removed (see ICS).
45		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
				The following messages are sent and shall be received on cell B.
46	UE			The SS deactivates cell C and activates cell B. Cell B is preferred by the UE.
47	UE			The UE is powered up or switched on and initiates an attach (see ICS). Step 48 is only performed for non-auto attach UE.
48	UE		Registration on CS	See TS34.108 Parameter mobile identity is TMSI-1
49	UE			UE initiates an attach automatically (see PICS), by MMI or AT commands.
50		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6 TMSI status = valid TMSI available
51		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-7
52		->	ATTACH COMPLETE	
53		<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
54		->	RRC CONNECTION REQUEST	
55		<-	RRC CONNECTION SETUP	
56		->	RRC CONNECTION SETUP COMPLETE	
57		->	PAGING RESPONSE	Mobile identity = TMSI-2
58		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
59		->	RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
60		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
61		->	RRC CONNECTION REQUEST	
62		<-	RRC CONNECTION SETUP	
63		->	RRC CONNECTION SETUP COMPLETE	
64		->	SERVICE REQUEST	service type = "paging response"
65		<-	RRC CONNECTION RELEASE	
66		->	RRC CONNECTION RELEASE COMPLETE	
67	UE			The UE is switched off or power is removed (see ICS).
68		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.5.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the completion of the PS attach procedure, and when UE receive the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'Location Area not allowed') from SS, UE shall:.

- perform the following action depending on UE location.

  When in the same location area, UE shall:

  - not perform combined PS attach.
  - delete the stored RAI or LAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number
  - store the LA in the 'forbidden location areas for regional provision of service'.

  When a new location area is entered, UE shall:

  - perform combined PS attach.
  - delete the list of forbidden LAs when power is switched off.

12.3.2.6 PS detach / rejected / No Suitable Cells In Location Area

12.3.2.6.1 Definition

12.3.2.6.2 Conformance requirement

1. If the network performs a PS detach procedure with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   1.1 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.2 store the LA in the 'forbidden location areas for roaming'.

Reference

3GPP TS 24.008 clauses 4.7.4.2.

12.3.2.6.3 Test purpose

To test the behaviour of the UE if the network sends the DETACH REQUEST message with the cause 'No Suitable Cells In Location Area'.

12.3.2.6.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode II.

User Equipment:

The UE has valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS sends a DETACH REQUEST message with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall not perform combined PS attach while in the same location area on the same PLMN. The SS checks that the UE shall perform PS attach when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The SS activates three cells simultaneously. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause 'No Suitable Cells In Location Area'
7	->		DETACH COMPLETE	
				The following message are sent and shall be received on cell B.
8	UE			The UE initiates an attach automatically, by MMI or by AT command.
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-•
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.3.2.6.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when the UE is powered up or switched on.

After the completion of the PS attach procedure, and when the UE receives the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'No Suitable Cells In Location Area') from SS, UE shall:

- delete the stored RAI or LAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.

- store the LA or the PLMN identity in the 'forbidden location areas for roaming'.

When the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach.

12.4 Routing area updating procedure

This procedure is used to update the actual routing area of an UE in the network.

12.4.1 Normal routing area updating

The routing area updating procedure is a GMM procedure used by PS UEs of UE operation mode A or C that are IMSI attached for PS services only.

12.4.1.1 Routing area updating / accepted

12.4.1.1.1 Definition

12.4.1.1.2 Conformance requirement

1) If the network accepts the routing area updating procedure and reallocates a P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

2) If the network accepts the routing area updating procedure from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the routing area updating procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is reallocated.

2) Old P-TMSI / P-TMSI signature is not changed.

12.4.1.1.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI. The UE acknowledge the new P-TMSI by sending ROUTING AREA ~~UPDATING~~UPDATE COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. The UE will not answer signalling addressed to the old P-TMSI.

2) The UE sends a ROUTING AREA ~~UPDATING~~ UPDATE REQUEST message. The SS accepts the P-TMSI and returns ROUTING AREA ~~UPDATING~~UPDATE ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the P-TMSI.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 22.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
8	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
10	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
11	<-		GMM INFORMATION	Message sent with P-TMSI-1
11b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
13	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell A.
14		SS		Set the signal strength of cell A to a lower signal strength than cell B The RF level of cell B is lowered until cell A is preferred by the UE.
15	UE			Cell A is preferred by the UE.
16	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-4
17	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-2 signature Routing area identity = RAI-1

Step	Direction		Message	Comments
	UE	SS		
18	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE 1 (used for NW-mode II).
18a	->		RRC CONNECTION REQUEST	
18b	<-		RRC CONNECTION SETUP	
18c	->		RRC CONNECTION SETUP COMPLETE	
19	->		SERVICE REQUEST	service type = "paging response"
19a	<-		RRC CONNECTION RELEASE	
19b	->		RRC CONNECTION RELEASE COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
22	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 21.

Specific message contents

None.

12.4.1.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:,

- initiate a routing area updating procedure with the information elements specified in the above Expected Sequence when the RF level of the attached cell is lower than the RF level of the new cell.
- use the P-TMSI which is included in the ROUTING AREA UPDATING ACCEPT message.
- acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- continue communication with the old P-TMSI.

12.4.1.2 Routing area updating / rejected / IMSI invalid / illegal ME

12.4.1.2.1 Definition

12.4.1.2.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network rejects a routing area updating procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'Illegal ME'.

12.4.1.2.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).
All three cells are operating in network operation mode II (in case of UE operation mode A)

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'Illegal ME'. The SS checks that the UE does not perform PS attach in the same or another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Attach result = 'PS only attached' Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6	SS			The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' Routing area identity = RAI-1
9	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	GMM cause = 'Illegal ME'
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
11	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
12	SS			The SS deactivates cell B and activates cell C.
13	UE			Cell C is preferred by the UE.
14	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
15	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
16	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
17	->		ATTACH REQUEST	Attach type = 'PS ~~only~~ attach~~ed~~' Mobile identity = IMSI
18	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
19	->		ATTACH COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a routing area updating procedure with the information elements specified in the above Expected Sequence.
- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number .
- consider the USIM as invalid for PS services until the UE is switched off or the USIM is removed.

12.4.1.3 Routing area updating / rejected / UE identity cannot be derived by the network

12.4.1.3.1 Definition

12.4.1.3.2 Conformance requirement

If the network rejects a routing area updating procedure from the User Equipment with the cause 'UE identity cannot be derived by the network', the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Depending on the manufacturer the UE may or may not perform a PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.3.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'UE identity cannot be derived by the network'.

12.4.1.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Automatic attach procedure when UE identity cannot be derived by the network Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal routing area updating with the cause value 'UE identity cannot be derived by the network'. The UE detach locally. A new PS attach may be performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS is set in network operation mode II and activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
10	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	GMM cause = 'UE identity cannot be derived by the network'
11	UE			If an automatic attach procedure by the UE is not possible when the UE identity cannot be derived by the network (see ICS) goto step 19.
12	UE			An Automatic PS attach procedure is initiated (see ICS).
13	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
14	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
15	->		ATTACH COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18				Stop the sequence
19	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
20	UE			No response from the UE to the request, as the UE has detached locally. This is checked for 10 seconds.

Specific message contents

None.

12.4.1.3.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a routing area updating procedure with the information elements specified in the above Expected Sequence.
- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.

12.4.1.4a Routing area updating / rejected / location area not allowed

12.4.1.4a.1 Definition

12.4.1.4a.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   1.1 not perform PS attach when in the same location area.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network rejects a routing area updating procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   2.1 perform PS attach when a new location area is entered.

   2.2 delete the list of forbidden LAs after switch off (power off).

Reference

3GPP TS 24.008 clauses 4.7.5.1.

12.4.1.4a.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.4.1.4a.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) , cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3).
All cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell C.
1		SS		The SS activates cell C.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 33.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell C is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
6		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7				The SS deactivates cell C and activates cell B.
8		SS		Cell B is preferred by the UE.
9		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
10		<-	ROUTING AREA ~~UPDATING~~UPDATE REJECT	GMM cause = 'Location Area not allowed'
11		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
12	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell A.
13		SS		The SS deactivates cell B and activates cell A.
14	UE			Cell A is preferred by the UE.
15	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
				The following messages are sent and shall be received on cell C.
16		SS		The SS deactivates cell B and activates cell C.
17	UE			Cell C is preferred by the UE.
18		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
20		->	ATTACH COMPLETE	
21	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
22		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
23	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
24		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
25		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3

Step	Direction		Message	Comments
	UE	SS		
26	->		ATTACH COMPLETE	
	SS			The following messages are sent and shall be received on cell A.
27				The SS deactivates cell C and activates cell A.
28				Cell A is preferred by the UE.
29	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
30	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Update result = 'RA updated' Routing area identity = RAI-1
31	UE			The UE is switched off or power is removed (see ICS).
32	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
33	SS			The SS is set in network operation mode II.
34	UE			The UE is set in UE operation mode A (see ICS), cell A is switched off and the test is repeated from step 2 to step 32.

Specific message contents

None.

12.4.1.4a.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a routing area updating procedure with the information elements specified in the above Expected Sequence.

When in the same location area, UE shall

- not perform PS attach..
- store the LA in the 'forbidden location areas for regional provision of service'.

When a new location area is entered, UE shall

- perform PS attach.
- delete the list of forbidden LAs when power is switched off.

12.4.1.4b Routing area updating / rejected / No Suitable Cells In Location Area

12.4.1.4b.1 Definition

12.4.1.4b.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   1.1 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.2 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.

1.3 search for a suitable cell in a different location area on the same PLMN.

Reference

3GPP TS 24.008 clauses 4.7.5.1.

12.4.1.4b.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off'.

12.4.1.4b.4 Method of test

Initial condition

System Simulator:

Four cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4),

All three cells are operating in network operation mode II.

User Equipment:

The UE has valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following message are sent and shall be received on cell D.
1		SS		The SS activates cell D.
2		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell D is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
5	->		ATTACH COMPLETE	
6		SS		The SS deactivates Cell D and activates Cell A, Cell B and Cell C. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C Cell A is preferred by the UE.
7	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-4
8	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	GMM cause = 'No Suitable Cells In Location Area' The following message are sent and shall be received on cell D.
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
11	->		ATTACH COMPLETE	
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.4b.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when the UE is powered up or switched on.

After rejecting the PS attach procedure with the cause 'No Suitable Cells In Location Area, UE shall:

- delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- store the LA or the PLMN identity in the 'forbidden location areas for roaming'.

When the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform PS attach.

12.4.1.5 Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes

12.4.1.5.1 Definition

12.4.1.5.2 Conformance requirement

When a routing area updating procedure is rejected with the attempt counter less than five, the UE shall repeat the routing area updating procedure after T3330 timeout.

When a T3330 timeout has occurred during a routing area updating procedure with the attempt counter five, the UE shall start timer T3302.

When the T3302 expire, a new routing area updating procedure shall be initiated.

GMM cause codes that can be selected are:
'IMSI unknown in HLR'
'IMEI not accepted'
'Illegal ME'
'UE identity cannot be derived by the network'
'Network failure'
'Congestion'
'retry upon entry into a new cell'
'Semantically incorrect message'
'Invalid mandatory information'
'Message type non-existent or not implemented'
'Message type not compatible with the protocol state'
'Information element non-existent or not implemented'
'Conditional IE error'
'Message not compatible with the protocol state'
'Protocol error, unspecified'

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.5.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.4.1.5.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure (attempt counter zero).

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter one) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter two) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter three) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter four) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure with attempt counter five (after T3311 expires).

The SS rejects the routing area updating procedure with a random cause code.

The UE shall not perform a new successful routing area updating procedure after T3311 seconds.

The UE initiates a routing area updating procedure with attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 10 minutes.

T3330; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7		SS		Cell B is preferred by the UE.
8	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	Random GMM cause
10		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
11	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
12	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	Random GMM cause
13		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
14	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
15	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	Random GMM cause
16		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
17	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
18	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	Random GMM cause
19		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
20	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
21	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	Random GMM cause
22		SS		The SS verifies that the UE does not attempt to attach for 10 minutes .
23		SS		The SS shall release the PS signalling connection.

Step	Direction		Message	Comments
	UE	SS		
24	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
25	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
26	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
27	UE			The UE is switched off or power is removed (see ICS).
28	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.5.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- perform the following actions depending on the conditions described below.

  Case 1) A routing area updating procedure is rejected from SS with the attempt counter less than five

  UE shall:

  - repeat the routing area updating procedure after T3330 timeout

  Case2) A timer T3330 timeout has occurred during a routing area updating procedure with the attempt counter five

  UE shall:

- start timer T3302

  Case3) The T3302 expires

  UE shall:

  - initiate a new routing area updating procedure

12.4.1.6 Routing area updating / abnormal cases / change of cell into new routing area

12.4.1.6.1 Definition

12.4.1.6.2 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the UE shall abort the routing area updating procedure and re-initiate it in the new routing area.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.6.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.6.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) and cell C In MCC1/MNC1/LAC1/RAC3 (RAI-5).
All cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update into a new routing area. The UE shall re-initiate a routing area updating procedure in the new routing area.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
~~2~~1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 18.
2		SS		The SS activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		SS		Cell B is preferred by the UE.
9		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
10		SS		No response to the ROUTING AREA ~~UPDATING~~UPDATE REQUEST message is given by the SS
				The following messages are sent and shall be received on cell C.
11		SS		The SS deactivates cell B and activates cell C.
12		SS		Cell C is preferred by the UE.
13		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
14		<-	ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-5
15		->	ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18		SS		The SS is set in network operation mode II.
19	UE			The UE is set in UE operation mode A(see ICS), cell C is deactivated and the test is repeated from step ~~3~~ 2 to step 17.

Specific message contents

None.

12.4.1.6.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate the routing area update procedure.

When change of cell into a new routing area is performed before the routing area updating procedure is finished, UE shall:

- abort the routing area updating procedure.
- re-initiate new routing area updating procedure in the new routing area.

12.4.1.7 Routing area updating / abnormal cases / change of cell during routing area updating procedure

12.4.1.7.1 Definition

12.4.1.7.2 Conformance requirement

When a change of cell within a new routing area is performed before the routing area updating procedure is finished, the UE shall perform the cell update before the routing area updating procedure is finished.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.7.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.7.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) and cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).
All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update within the routing area. The UE then waits for the ROUTING AREA UPDATE ACCEPT message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach result = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7		SS		Cell B is preferred by the UE.
8	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9		SS		No response to the ROUTING AREA ~~UPDATING~~UPDATE REQUEST message is given by the SS
				The following messages are sent and shall be received on cell C.
10		SS		The SS deactivates cell B and activates cell C.
11		SS		Cell C is preferred by the UE.
12a	->		CELL UPDATE	Cell update cause = 'cell reselection'
12b		<-	CELL UPDATE CONFIRM	
13		<-	ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
14	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.7.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate routing area update procedure.

When a change of cell within a new routing area is performed, UE shall:

- perform the cell update before the routing area updating procedure is finished.

12.4.1.8 Routing area updating / abnormal cases / P-TMSI reallocation procedure collision

12.4.1.8.1 Definition

12.4.1.8.2 Conformance requirement

When a P-TMSI REALLOCATION ~~REQUEST~~COMMAND message is received by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.8.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a P-TMSI reallocation procedure. The UE shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach result = 'PS attach' Mobile identity = IMSI
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		SS		Cell B is preferred by the UE.
9		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-1
10		<-	P-TMSI REALLOCATION ~~REQUEST~~COMMAND	Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	UE			The UE ignores the P-TMSI reallocation ~~request~~command.
12		<-	ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
13		->	ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.8.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate the routing area updating procedure.

When a P-TMSI REALLOCATION REQUEST message is received from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- ignore the P-TMSI reallocation procedure.

- continue with the routing area updating procedure.

12.4.2 Combined routing area updating

The combined routing area updating procedure is a GMM procedure used by PS UEs of UE operation mode A that are IMSI attached for PS and non-PS services. In order to use the combined routing area updating procedure, the network must operate in network operation mode I.

12.4.2.1 Combined routing area updating / combined RA/LA accepted

12.4.2.1.1 Definition

12.4.2.1.2 Conformance requirement

1) If the network accepts the combined routing area updating procedure and reallocates a P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

2) If the network accepts the combined routing area updating procedure from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.1.3 Test purpose

To test the behaviour of the UE if the network accepts the combined routing area updating procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is reallocated.

2) Old P-TMSI / P-TMSI signature is not changed.

3) Mobile terminating CS call is allowed with IMSI.

4) Mobile terminating CS call is allowed with TMSI.

12.4.2.1.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) A combined PS attach procedure is performed. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI, unassigns the TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI and IMSI. The UE acknowledge the new P-TMSI by sending ROUTING AREA ~~UPDATING~~UPDATE COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the IMSI is used

2) The UE is CS paged in order to verify that the IMSI is used for CS calls.

3) A combined PS attach procedure is performed. The UE sends an ROUTING AREA ~~UPDATING~~UPDATE REQUEST message. The SS accepts the P-TMSI signature and returns ROUTING AREA ~~UPDATING~~UPDATE ACCEPT message without any P-TMSI and with a new TMSI. The UE acknowledge the new TMSI by sending ROUTING AREA ~~UPDATING~~UPDATE COMPLETE message. Further communication UE-SS is performed by the old P-TMSI. For CS calls, the new TMSI is used.

4) The UE is CS paged in order to verify that the TMSI is used for CS calls.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	SS			The following messages are sent and shall be received on cell B. Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
7	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
9	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	->		RRC CONNECTION REQUEST	
10b	<-		RRC CONNECTION SETUP	
10c	->		RRC CONNECTION SETUP COMPLETE	
11	->		SERVICE REQUEST	service type = "paging response"
11a	<-		RRC CONNECTION RELEASE	
11b	->		RRC CONNECTION RELEASE COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
13	->		RRC CONNECTION REQUEST	
14	<-		RRC CONNECTION SETUP	
15	->		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
16	->		PAGING RESPONSE	Mobile identity = IMSI
17	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
18	->		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell A.
19		SS		The RF level of cell A is increased and the RF level of cell B is lowered until cell A is preferred by the UE.
20	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
21	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
22	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
23a	->		RRC CONNECTION REQUEST	
23b	<-		RRC CONNECTION SETUP	
23c	->		RRC CONNECTION SETUP COMPLETE	
24	->		SERVICE REQUEST	service type = "paging response"
24a	<-		RRC CONNECTION RELEASE	
24b	->		RRC CONNECTION RELEASE COMPLETE	
25	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
26	->		RRC CONNECTION REQUEST	
27	<-		RRC CONNECTION SETUP	
28	->		RRC CONNECTION SETUP COMPLETE	
29	->		PAGING RESPONSE	Mobile identity = TMSI-1
30	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31	->		RRC CONNECTION RELEASE COMPLETE	
32	UE			The UE is switched off or power is removed (see ICS).
33	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.2.1.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence when RF level of the attached cell is lower than the RF level of the new cell.
- acknowledge the new P-TMSI.
- continue communication with the new P-TMSI If SS reallocates a P-TMSI.
- continue communication with the old P-TMSI If SS does not reallocate the old P-TMSI.

12.4.2.2 Combined routing area updating / UE in CS operation at change of RA

12.4.2.2.1 Definition

12.4.2.2.2 Conformance requirement

PS UE in UE operation mode A that is in an ongoing CS transaction at change of routing area shall initiate the normal routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.2.3 Test purpose

To test the behaviour of the UE if the routing area is changed during an ongoing circuit switched transmission.

12.4.2.2.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A combined PS attach procedure is performed. The UE in UE operation mode A initiates a CS call. The routing area change. The UE will perform the normal routing area updating procedure durng the ongoing circuit-switched transaction.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			A CS call is initiated.
7	SS			Activate cell B with the same signal strength as cell A.
8	<-			Handover commanded by SS on to DCH of cell B The following messages are sent and shall be received on cell B.
~~7~~	~~SS~~			~~Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.~~
~~8~~9	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
~~9~~10	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
~~10~~11	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
~~11~~12	<-		PAGING TYPE2	Mobile identity = P-TMSI-1 Paging order is for PS services.
~~12~~13	->		SERVICE REQUEST	service type = "paging response"
~~13~~14	SS			The SS initiates the RRC connection release.
~~14~~15	UE			The UE is switched off or power is removed (see ICS).
~~15~~16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.2.2.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a CS call. at change of routing area.

- initiate a normal routing area updating procedureduring the CS connection.

12.4.2.3 Combined routing area updating / RA only accepted

12.4.2.3.1 Definition

12.4.2.3.2 Conformance requirement

1) If the network accepts the combined PS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the UE the User Equipment shall delete the stored TMSI, LAI and CKSN. The User Equipment shall consider USIM invalid for non-PS services until power is switched off or USIM is removed.

2) If the network accepts the combined PS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the UE, an UE operation mode A UE may perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.4.2.3.3 Test purpose

Test porpose1

To test the behaviour of the UE if the network accepts the routing area updating procedure with indication RA only, GMM cause 'IMSI unknown in HLR'.

Test porpose2

To test the behaviour of the UE if the network accepts the routing area updating procedure with indication RA only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

12.4.2.3.4 Method of test

Test Procedure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells operating in network operation mode I.

User Equipment:

The UE has a valid ITMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

After attach, the UE sends an ROUTING AREA UPDATE REQUEST message. The SS allocates a P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication UE - SS is performed by the P-TMSI. CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6	SS			The SS deactivates cell A and activates cell B.
7	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'IMSI unknown in HLR'
9	->		ROUTING AREA UPDATING COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	->		RRC CONNECTION REQUEST	
10b	<-		RRC CONNECTION SETUP	
10c	->		RRC CONNECTION SETUP COMPLETE	
11	->		SERVICE REQUEST	service type = "paging response"
11a	<-		RRC CONNECTION RELEASE	
11b	->		RRC CONNECTION RELEASE COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
13	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Test Procedure2

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Automatic MM IMSI attach procedure for UE operation mode A UE Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

After attach, the UE sends an ROUTING AREA UPDATE REQUEST message . The SS allocates a new P-TMSI signature and returns ROUTING AREA UPDATE ACCEPT message. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. An UE operation mode A UE may perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. CS services are not possible unless an IMSI attach procedure is performed.

Expected Sequence

Dependent whether the option 'Automatic MM IMSI attach procedure for UE operation mode A UE' is not supported or not, the steps 1-13 or 14-35 apply depending on manufacturer (see ICS).

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A
1	UE			The UE is set in UE operation mode A and no automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6	SS			The SS deactivates cell A and activates cell B.
7	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
9	->		ROUTING AREA UPDATING COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
11	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach' Stop the sequence.
				The following messages are sent and shall be received on cell B

Step	Direction		Message	Comments
	UE	SS		
14	UE			Automatic MM IMSI attach procedure is indicated (see ICS).
15	UE			The UE is powered up or switched on and initiates an attach (see ICS).
16	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
17	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
18	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell A.
19	SS			The SS deactivates cell B and activates cell A.
20	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
21	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
22	->		ROUTING AREA UPDATING COMPLETE	
23	->		RRC CONNECTION REQUEST	
24	<-		RRC CONNECTION SETUP	
25	->		RRC CONNECTION SETUP COMPLETE	
26	->		LOCATION UPDATING REQ	Location updating type = IMSI attach.
27	<-		LOCATION UPDATING ACC	The SS allocates a new TMSI.
28	->		TMSI REALLOCATION COMP	Location updating type = IMSI attach.
29	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
30	->		RRC CONNECTION RELEASE COMPLETE	
31	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
32	->		RRC CONNECTION REQUEST	
33	<-		RRC CONNECTION SETUP	
34	->		RRC CONNECTION SETUP COMPLETE	
35	->		PAGING RESPONSE	Mobile identity = TMSI-1
36	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
37	->		RRC CONNECTION RELEASE COMPLETE	
38	UE			The UE is switched off or power is removed (see ICS).
39	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.2.3.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area updating procedure.
- perform the following actions depending on the GMM cause.

  Case 1) GMM cause = 'IMSI unknown in HLR'.

  UE shall:

  - delete the stored TMSI, LAI and CKSN.
  - consider USIM invalid for non-PS services until power is switched off or USIM is removed.

  Case 2) GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

  UE shall:

  - perform an MM IMSI attach procedure. (only applied UE operation mode A)

12.4.2.4 Combined routing area updating / rejected / PLMN not allowed

12.4.2.4.1 Definition

12.4.2.4.2 Conformance requirement

1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall:

   1.1 not perform combined GPRA attach when switched on in the same location area or PLMN.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI, P-TMSI signature, TMSI CKSN andLAI.

   1.3 store the PLMN in the 'forbidden PLMN list'.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.4.3 Test purpose

To test the behaviour of the UE if the network rejects the combined routing area updating procedure of the UE with the cause 'PLMN not allowed'.

12.4.2.4.4 Method of test

Initial condition

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/~~MNC1~~MNC2/LAC1/RAC1 (RAI-~~1~~8), cell B in MCC1/~~MNC1~~MNC2/LAC1/RAC2 (RAI-~~4~~10), cell C in MCC1/~~MNC1~~MNC2/LAC2/RAC1 (RAI-~~3~~9) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2).
All four cells are operating in network operation mode I

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'PLMN not allowed'. The SS checks that the UE does not perform PS attach if activated in the same PLMN. The SS checks that the UE does not perform IMSI attach if activated in the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-~~1~~8 Mobile identity = TMSI-1
5		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-~~1~~8 TMSI status = valid TMSI available
10		<-	ROUTING AREA ~~UPDATING~~UPDATE REJECT	GMM cause = 'PLMN not allowed'
11	UE			The UE initiates an attach by MMI or AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
15		SS		The SS deactivates cell B and activates cell C.
16	UE			Cell C is preferred by the UE.
17	UE			The UE initiates an attach by MMI or by AT command.
18	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
19		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
				The following messages are sent and shall be received on cell A.
21		SS		The SS deactivates cell C and activates cell A.
22	UE			Cell A is preferred by the UE.
23	UE			The UE initiates an attach by MMI or by AT command.
24	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
25		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
26	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell D.
27		SS		The SS deactivates cell A and activates cell D.
28	UE			Cell D is preferred by the UE.
29	UE			The UE initiates an attach automatically, by MMI or by AT command.

Step	Direction		Message	Comments
	UE	SS		
30	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
31	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Mobile identity = IMSI
32	->		ATTACH COMPLETE	
33	UE			The UE is switched off or power is removed (see ICS).
34	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.2.4.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence
- delete the stored P-TMSI, P-TMSI signature, TMSI, RAI, LAI, ciphering key sequence number PS ciphering key sequence number.
- reset the location update attempt counter when UE receive the ROUTING AREA UPDATING REJECT message(GMM cause = 'PLMN not allowed') from SS.
- store the PLMN identity in the 'forbidden PLMN list'.
- not perform combined PS attach procedure when the UE is switched on in the same PLMN.

12.4.2.5a Combined routing area updating / rejected / roaming not allowed in this location area

12.4.2.5a.1 Definition

12.4.2.5a.2 Conformance requirement

1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI P-TMSI signature, TMSI, CKSN and LAI.

   1.3 store the LA in the 'forbidden location areas for roaming'.

   1.4 perform combined PS attach when a new location area is entered.

2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.5a.3 Test purpose

Test purpose1

To test that on receipt of a rejection using the 'Roaming not allowed in this area' cause code, the UE ceases trying a routing area updating procedure on that location area. Successful combined routing area updating procedure is possible in other location areas.

Test purpose2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

12.4.2.5a.4 Method of test

12.4.2.5a.4.1 Test procesure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. A new attempt for a combined PS attach is not possible. Successful combined PS attach procedure is performed in another location area. The UE is mobed back to the 1st location area. A combined routing area updating shall not be performed, as the LA is on the forbidden list.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
				The following messages are sent and shall be received on cell A.
17		SS		The SS deactivates cell B and activates cell A.
18	UE			Cell A is preferred by the UE.
19	UE			The UE initiates an attach automatically, by MMI or by AT command.
20	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
21	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 Mobile identity = TMSI-1
22	->		ATTACH COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24	->		RRC CONNECTION REQUEST	
25	<-		RRC CONNECTION SETUP	
26	->		RRC CONNECTION SETUP COMPLETE	
27	->		PAGING RESPONSE	Mobile identity = TMSI-1
28	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
29	->		RRC CONNECTION RELEASE COMPLETE	
30	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.

Step	Direction		Message	Comments
	UE	SS		
30a	->		RRC CONNECTION REQUEST	
30b	<-		RRC CONNECTION SETUP	
30c	->		RRC CONNECTION SETUP COMPLETE	
31	->		SERVICE REQUEST	service type = "paging response"
31a	<-		RRC CONNECTION RELEASE	
31b	->		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell B.
32	SS			The SS deactivates cell A and activates cell B.
33	UE			No ROUTING AREA UPDATING REQUEST sent to SS (SS waits 30 seconds).
34	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
35	UE			No response from the UE to the request. This is checked for 10 seconds.
36	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
37	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

12.4.2.5a.4.2 Test procesure2

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC/LAC2/RAC1 (RAI-3).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 seconds and switched on again. The SS checks that a combined PS attach is possible on the cell on which the previous combined routing area updating had been rejected.

If USIM removal is possible without switching off:
The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. The USIM is removed and inserted in the UE. The SS checks that a PS attach procedure and routing area updating procedure is possible on the cell on which the routing area updating had previously been rejected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
18	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
19	UE			The UE initiates an attach by MMI or AT command.
20	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
21	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 Mobile identity = TMSI-1
22	->		ATTACH COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24	->		RRC CONNECTION REQUEST	
25	<-		RRC CONNECTION SETUP	
26	->		RRC CONNECTION SETUP COMPLETE	
27	->		PAGING RESPONSE	Mobile identity = TMSI-1
28	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.

Step	Direction		Message	Comments
	UE	SS		
29	->		RRC CONNECTION RELEASE COMPLETE	
30	<-		PAGING TYPE1	Mobile identity = P-TMSI-1
30a	->		RRC CONNECTION REQUEST	
30b	<-		RRC CONNECTION SETUP	
30c	->		RRC CONNECTION SETUP COMPLETE	
31	->		SERVICE REQUEST	service type = "paging response"
31a	<-		RRC CONNECTION RELEASE	
31b	->		RRC CONNECTION RELEASE COMPLETE	
32	UE			The UE is switched off or power is removed (see ICS).
33	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.5a.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence
- delete the stored P-TMSI, P-TMSI signature, TMSI, RAI, LAI, ciphering key sequence number PS ciphering key sequence number.
- reset the location update attempt counter when UE receive the ROUTING AREA UPDATING REJECT message(GMM cause = 'Roaming not allowed in this area') from SS.
- store the LAI in the 'forbidden location areas for roaming'.
- not perform combined PS attach procedure when the UE is switched on in the same location area.
- perform combined PS attach procedure when a new location area is entered.

12.4.2.5b Combined routing area updating / rejected / No Suitable Cells In Location Area.

12.4.2.5b.1 Definition

12.4.2.5b.2 Conformance requirement

1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   1.1 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.2 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.

1.3 search for a suitable cell in a different location area on the same PLMN.

Reference

3GPP TS 24.008 clauses 4.7.5.2.

12.4.2.5b.3 Test purpose

To test the behaviour of the UE if the network rejects a combined routing area updating procedure of the UE with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off'.

12.4.2.5b.4 Method of test

Initial condition

System Simulator:

Four cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4),

All three cells are operating in network operation mode II.

User Equipment:

The UE has valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following message are sent and shall be received on cell D.
1		SS		The SS activates cell D.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell D is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
6		SS		The SS deactivates Cell D and activates Cell A, Cell B and Cell C. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C Cell A is preferred by the UE.
7	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4
8	<-		ROUTING AREA ~~UPDATING~~UPDATE REJECT	GMM cause = 'No Suitable Cells In Location Area' The following message are sent and shall be received on cell B.
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attached' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
11	->		ATTACH COMPLETE	
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.2.5b.5 Test requirements

UE shall:

- initiate a Combined PS attach procedure with the information elements specified in the above Expected Sequence when the UE is powered up or switched on.

After rejecting the Combined PS attach procedure with the cause 'No Suitable Cells In Location Area, UE shall:

- delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- store the LA or the PLMN identity in the 'forbidden location areas for roaming'.

When the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform PS attach.

12.4.2.6 Combined routing area updating / abnormal cases / access barred due to access class control

12.4.2.6.1 Definition

12.4.2.6.2 Conformance requirement

1) The UE shall not perform combined routing area updating procedure, but stays in the current serving cell and applies normal cell reselection process.

2) The User Equipment shall perform the combined routing area updating procedure when:

   2.1 Access is granted.

   2.2 Cell is changed.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.6.3 Test purpose

Test ~~porpose1~~purpose1

To test the behaviour of the UE in case of access class control (access is granted).

Test ~~porpose2~~purpose2

To test the behaviour of the UE in case of access class control (cell is changed).

12.4.2.6.4 Method of test

12.4.2.6.4.1 Test procedure1

Initial condition

An ~~random~~ access class x (0-15) is arbitrarily chosen~~selected~~. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred on Cell B.

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has Access Class x not barred, cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) has Access Class x barred.
Both cells are operating in network operation mode I.
~~Access class x barred.~~

User Equipment:

The UE has valid IMSI. UE is Idle Updated on cell A.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

The SS indicates that access class x is not barred. A routing area updating procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
~~7~~6		SS		The SS deactivates cell A and activates cell B.
~~8~~7	UE			Cell B is preferred by the UE.
~~9~~8	UE			No ROUTING AREA UPDATE REQUEST sent to SS, as access class ~~X~~ x is barred (SS waits 30 seconds).
~~10~~9		SS		The access class x is not barred anymore.
~~11~~10	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
~~12~~11	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-4
~~13~~12	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
~~14~~13	UE			The UE is switched off or power is removed (see ICS).
~~15~~14	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.6.4.2 Test procedure2

Initial condition

An ~~random~~ access class x (0-15) is arbitrarily chosen~~selected~~. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell ~~A~~B.

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x not barred, cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) has access class x barred, cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4) has access class x not barred.
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A routing area updating procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5		->	ATTACH COMPLETE	Mobile identity = IMSI
				The following messages are sent and shall be received on cell B.
~~7~~6		SS		The SS deactivates cell A and activates cell B.
~~8~~7	UE			Cell B is preferred by the UE.
~~9~~8	UE			No ROUTING AREA ~~UPDATING~~UPDATE REQUEST sent to SS, as access class ~~X~~ x is barred (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
~~10~~9		SS		The SS deactivates cell B and activates cell C.
~~11~~10	UE			Cell C is preferred by the UE.
~~12~~11		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
~~13~~12		<-	ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1~~IMSI~~ Routing area identity = RAI-4
~~14~~13		->	ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
~~15~~14	UE			The UE is switched off or power is removed (see ICS).
~~16~~15		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.6.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- not perform the combined routing area updating procedure.
- stay in the current serving cell.
- apply the normal cell reselection process.(as access class X is barred)
- perform the combined routing area updating procedure when the barred state is removed or because of a cell change.

12.4.2.7 Combined routing area updating / abnormal cases / attempt counter check / procedure timeout

12.4.2.7.1 Definition

12.4.2.7.2 Conformance requirement

1) When a T3330 timeout has occurred during a routing area updating procedure, the UE shall repeat the routing area updating procedure after T3330 timeout until the procedure is repeated five times.
2) When a routing area updating procedure is repeated five times, the routing area updating attempt counter is incremented and five more routing area updating procedures are performed. This procedure is repeated until the routing area updating attempt counter is five, the UEshall then start timer T3302.
3) When the T3302 expire, a new routing area updating procedure shall be initiated.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.7.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.4.2.7.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI~~TMSI, P-TMSI, P-TMSI signature and RAI~~.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure (routing area updating attempt counter zero). The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter one) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter two) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter three) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter four) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and as the routing area updating attempt counter is five. T3302 is started.

The UE initiates a routing area updating procedure with routing area updating attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 12 minutes.

T3311; 15 seconds.

T3330; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
~~7~~6		SS		The SS deactivates cell A and activates cell B.
~~8~~7	UE			Cell B is preferred by the UE. K = 1.
~~9~~8		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k (k is not visible. It is only used for clarifying the sequence.) Retransmission counter = 0
~~10~~9		SS		No response is given from the SS.
~~11~~10		SS		The SS verifies that the time between the RA update requests is T3330seconds
~~12~~11		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 1
~~13~~12		SS		No response is given from the SS.
~~14~~13		SS		The SS verifies that the time between the RA update requests is T3330seconds
~~15~~14		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 2
~~16~~15		SS		No response is given from the SS.
~~17~~16		SS		The SS verifies that the time between the RA update requests is T3330seconds
~~18~~17		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 3
~~19~~18		SS		No response is given from the SS.
~~20~~19		SS		The SS verifies that the time between the RA update requests is T3330seconds
~~21~~20		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 4
~~22~~21		SS		No response is given from the SS.

Step	Direction		Message	Comments
	UE	SS		
~~23~~22	SS			The SS verifies that the time between the RA update requests is T3311 + T3330 seconds.
~~24~~23	SS			Step ~~9 – 23~~8 – 22 is repeated four times with k = 2, k = 3, k = 4 and k = 5
~~23~~24	SS			The SS verifies that the time between the RA update requests is T3302 + T3330 seconds
~~24~~25	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
~~25~~26	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
~~26~~27	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
~~27~~28	UE			The UE is switched off or power is removed (see ICS).
~~28~~29	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.7.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area updating procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.
- perform the following actions depending on the conditions described below.

  Case 1) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter less than five and the Retransmission counter less than five

  UE shall:

  - repeat the combined routing area updating procedure after the timer T3330 timeout

  Case2) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter less than five and the Retansmission counter five

  UE shall:

  - start the timer T3311

  Case 3) A timer T3311 timeout has occoured

  UE shall:

  - reset the Retransmission counter and increase the Routing area attempt counter
  - repeat the combined routing area updating procedure

Case 4) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter five and the Retansmission counter five.

UE shall:

- start the timer T3302

Case5) The timer T3302 expires

UE shall:

- initiate a new routing area updating procedure

12.4.2.8 Combined routing area updating / abnormal cases / change of cell into new routing area

12.4.2.8.1 Definition

12.4.2.8.2 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the UE shall abort the routing area updating procedure and re-initiate it in the new routing area.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.8.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC1/RAC3 (RAI-5).
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update into a new routing area. The UE shall re-initiate a routing area updating procedure in the new routing area. The UE shall not increment the attempt counter.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		No response id given from the SS.
				The following messages are sent and shall be received on cell C.
10		SS		Activate cell C with a lower signal strength than cell B.
11	UE			The RF level of cell B is lowered, and the RF level of cell C is increased, until cell C is preferred by the UE.
12	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
13	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-5
14	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.8.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate the routing area update procedure.

When change of cell into new routing area is performed before the routing area updating procedure is finished, UE shall:

- abort the routing area updating procedure.
- re-initiate new routing area updating procedure in the new routing area.

12.4.2.9 Combined routing area updating / abnormal cases / change of cell during routing area updating procedure

12.4.2.9.1 Definition

12.4.2.9.2 Conformance requirement

When a change of cell within new routing area is performed before the routing area updating procedure is finished, the UE shall perform the cell update before the routing area updating procedure is finished.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.9.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI. UE is Idle Updated on cell A.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update within the routing area. The UE then waits for the ROUTING AREA UPDATE ACCEPT message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		No response id given from the SS.
				The following messages are sent and shall be received on cell C.
10		SS		Activate cell C with a lower signal strength than cell B.
11	UE			The RF level of cell B is lowered until cell C is preferred by the UE.
12a	->		CELL UPDATE	Cell update cause = 'cell reselection'
12b	<-		CELL UPDATE CONFIRM	
13	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
14	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.9.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate routing area update procedure.

When a change of cell within a new routing area is performed before the routing area updating procedure is finished, UE shall:

- perform the cell update.

12.4.2.10 Combined routing area updating / abnormal cases / PS detach procedure collision

12.4.2.10.1 Definition

12.4.2.10.2 Conformance requirement

1) When a detach request is received with cause 'PS detach' or 'combined PS/IMSI detach' by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall terminate the routing area updating procedure and continue with the PS detach procedure.

2) When a detach request is received with cause 'IMSI detach' by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall ignore the detach request and continue with the routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.10.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.10.4 Method of test

12.4.2.10.4.1 Test procedure1

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a PS detach procedure with cause 'PS detach' or 'combined PS/IMSI detach'. The UE shall terminate the routing area updating procedure and continue with the PS detach procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		The SS ignores the ROUTING AREA ~~UPDATING~~UPDATE REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 're-attach not required'
11	->		DETACH ACCEPT	

Specific message contents

None.

12.4.2.10.4.2 Test procedure2

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a PS detach procedure with cause 'IMSI detach'. The UE shall ignore the detach procedure and continue with the routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8		->	ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		The SS ignores the ROUTING AREA ~~UPDATING~~UPDATE REQUEST message and initiates a detach procedure.
10		<-	DETACH REQUEST	Detach type = 'IMSI detach'
11	UE			The UE ignores the DETACH REQUEST message and continue the routing area updating procedure.
12		<-	ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
13		->	ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.10.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate routing area update procedure.
- perform the follow actions depending on the conditions described below.

Case 1) UE receives a DETACH REQUEST message with cause 'PS detach' or 'combined PS/IMSI detach' from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- terminate the routing area updating procedure
- continue with the PS detach procedure.

Case 2) UE receives a DETACH REQUEST message with cause 'IMSI detach' from SS while waiting for a ROUTING AREA UPDATING ACCEPT message, UE shall:

- ignore the detach request.
- continue with the routing area updating procedure.

12.4.3 Periodic routing area updating

12.4.3.1 Periodic routing area updating / accepted

12.4.3.1.1 Definition

12.4.3.1.2 Conformance requirement

The User Equipment shall perform a periodic routing area update procedure after a T3312 timeout.

Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.1.

12.4.3.1.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure with identity P-TMSI. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. A routing area updating procedure is performed at T3312 timeout.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 11.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
5	->		ATTACH COMPLETE	
6	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
7		SS		The SS verifies that the time between the attach and the periodic RA updating is T3312
8	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1
9	UE			The UE is switched off or power is removed (see ICS).
10	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
11				The SS is set in network operation mode II.
12	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 10.

Specific message contents

None.

12.4.3.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- set and start the timer T3312 when the ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message from SS. The value of the timer T3312 is sent by SS to UE in ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message.
- initiate a routing area updating procedure with Update type = 'Periodic updating' when the timer T3312 is expired.

12.4.3.2 Periodic routing area updating / accepted / T3312 default value

12.4.3.2.1 Definition

12.4.3.2.2 Conformance requirement

The User Equipment shall perform a periodic routing area update procedure after a T3312 timeout.

Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.2.

12.4.3.2.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a combined PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312 is omitted. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. After 54 minutes, a periodic routing area updating procedure is initiated by the UE.

T3312; default value 54 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
3	<-		ATTACH ACCEPT	Attach result = 'Combined PS /IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 T3312 = 54 min
4	->		ATTACH COMPLETE	
5	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
6	SS			The SS verifies that the time between the attach request and the periodic RA updating is T3312
7	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	No new mobile identity assigned. P-TMSI and TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature Routing area identity = RAI-1
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.3.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- set and start the timer T3312 when the ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message from SS.
- initiate a routing area updating procedure with Update type = 'Periodic updating' when the timer T3312 is expired.

12.4.3.3 Periodic routing area updating / no cell available / network mode I

12.4.3.3.1 Definition

12.4.3.3.2 Conformance requirement

If the UE is both IMSI attached for PS and non-PS services, and if the UE lost coverage of the registered PLMN and timer T3312 expires; if the UE returns to coverage in a cell that supports PS and the network is in network operation mode I, then the UE shall perform a combined routing area update procedure.

Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.1.

12.4.3.3.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.3.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Cell A is operating in network operation mode II and cell B is in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Idle updated on Cell A

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. PS radio contact is distorted before T3312 timeout. PS radio contact is established again (after T3312 timeout), and a routing area updating procedure is performed immediately.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2		SS		The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
6	->		ATTACH COMPLETE	
7		SS		After 5 minutes, the signal strength is lowered until the UE have lost contact with the SS.
8		SS		Wait 2 minutes.
				The following messages are sent and shall be received on cell B.
9		SS		The SS deactivates cell A and activates cell B.
10	UE			Cell B is preferred by the UE.
11	UE			The UE immediately start a combined RA updating procedure
12	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
13	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-3 P-TMSI-3 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
14	->		ROUTING AREA UPDATE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.3.3.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

When the UE is both IMSI attached for PS and non-PS service , and if the UE lost coverage of the reiterated PLMN and the timer T3312 expires, if the UE returns to coverage in a cell that supports PS and the network is in network oration mode I, UE shall:

- perform the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach".

12.4.3.4 Combined periodic routing area updating / no cell available

12.4.3.4.1 Definition

12.4.3.4.2 Conformance requirement

If the UE is both IMSI attached for PS and non-PS services, and if the UE lost coverage of the registered PLMN and timer T3312 expires; if the UE returns to coverage in a cell that supports PS and the network is in network operation mode II, then the UE shall perform a periodic routing area update procedure and a periodic location update procedure.

Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.2.

12.4.3.4.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Idle updated on Cell A

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. PS radio contact is distorted before T3312 timeout. PS radio contact is established again (after T3312 timeout), and a periodic routing area updating procedure and a periodic location update procedure is performed immediately.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
3	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
4	->		ATTACH COMPLETE	
5-12			(void)	
13	SS			After 5 minutes, the signal strength is lowered until the UE have lost contact with the SS.
14	SS			After 2 minutes, the signal strength is increased until the UE have got contact with the SS.
15	UE			The UE immediately start the periodic RA updating procedure
16	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
17	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature Routing area identity = RAI-1
18	->		RRC CONNECTION REQUEST	
19	<-		RRC CONNECTION SETUP	
20	->		RRC CONNECTION SETUP COMPLETE	
21	->		LOCATION UPDATING REQ	Location updating type = Periodic LA updating.
22	<-		LOCATION UPDATING ACC	
23	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
24	->		RRC CONNECTION RELEASE COMPLETE	
25	UE			The UE is switched off or power is removed (see ICS).
26	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.3.4.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

When the UE is both IMSI attached for PS and non-PS service , and if the UE lost coverage of the reiterated PLMN and the timer T3312 expires, if the UE returns to coverage in a cell in the same RA that supports PS and that indicates that the network is in network operation mode II, UE shall:

- perform the periodic routing area updating procedure indicating "Periodic updating".

- perform the periodic location updating procedure.

12.5 P-TMSI reallocation

12.5.1 Definition

12.5.2 Conformance requirement

1) A User Equipment shall acknowledge a new P-TMSI when explicitly allocated.

2) The P-TMSI shall be updated on the USIM when the User Equipment is correctly deactivated in accordance with the manufacturer's instructions.

3) A User Equipment shall use the given P-TMSI in further communication with the network.

Reference

3GPP TS 24.008 clause 4.7.6.

12.5.3 Test purpose

To verify that the UE is able to receive and acknowledge a new P-TMSI by means of an explicit P-TMSI reallocation procedure.

To verify that the UE has stored the P-TMSI in a non-volatile memory.

The implicit reallocation procedure is tested in the attach procedure.

12.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No (only if mode A not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

An explicit P-TMSI reallocation procedure is performed (P-TMSI reallocation command sent from the SS and acknowledged from the UE by P-TMSI reallocation complete). The UE is PS detached and switched off. Its power supply is interrupted for 10 seconds. The power supply is resumed and then the UE is switched on. A PS attach procedure is performed with the given P-TMSI as identity.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS). If UE operation mode A not supported set the UE in operation mode C.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
7	->		P-TMSI REALLOCATION COMPLETE	
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
10	UE			Ensure the power is removed from the UE for at least 10 seconds
11	UE			The UE is powered up or switched on and initiates an attach (see ICS).
12	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-3 signature Routing area identity = RAI-1
14	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
15	->		RRC CONNECTION REQUEST	
16	<-		RRC CONNECTION SETUP	
17	->		RRC CONNECTION SETUP COMPLETE	
18	->		SERVICE REQUEST	service type = "paging response"
19	<-		RRC CONNECTION RELEASE	
20	->		RRC CONNECTION RELEASE COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.5.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, and when UE receive of the P-TMSI REALLOCATION COMMAND message, UE shall:

- store the allocated Routing Area Identifier(RAI) and the allocated P-TMSI.
- acknowledge a new P-TMSI.
- send the P-TMSI and a P-TMSI REALLOCATION COMPLETE message to SS.
- update P-TMSI on the USIM when UE is correctly deactivated in accordance with the manufacturer's instructions.
- use the given P-TMSI in further communication with SS.

12.6 PS authentication and ciphering

12.6.1 Test of authentication

The purpose of this procedure is to verify the user identity. A correct response is essential to guarantee the establishment of the connection. If not, the connection will drop.

12.6.1.1 Authentication accepted

12.6.1.1.1 Definition

12.6.1.1.2 Conformance requirement

A User Equipment shall correctly respond in an authentication and ciphering procedure by sending a response with the RES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

Reference

3GPP TS 24.008 clause 4.7.7.

12.6.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the authentication and ciphering procedure.

12.6.1.1.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

The SS checks the value RES sent by the UE in the AUTHENTICATION AND CIPHERING RESPONSE message.

The UE initiates a routing area updating procedure and the SS checks the value of the PS Ciphering Key Sequence Number sent by the UE in the ROUTING AREA REQUEST message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 17.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
6	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
7		SS		The SS checks the RES value.
8	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
10		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
11	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
12		SS		The value of PS-CKSN is checked
13	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
14	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
17		SS		Reset the RF level of cell A to default state. Deactivate cell B.
18	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 16.

Specific message contents

None.

12.6.1.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.

When the UE receives the AUTHENTICATION AND CIPHERING REQUEST message form SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message with the RES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

12.6.1.2 Authentication rejected by the network

12.6.1.2.1 Definition

12.6.1.2.2 Conformance requirement

1) After reception of an Authentication Reject message the UE shall:

   1.1 not perform normal routing area updating

   1.2 not perform periodic routing area updating

   1.3 not perform PS detach if switched off

2) The UE shall delete the stored RAI, PS-CKSN P-TMSI and P-TMSI signature. USIM shall be considered invalid until power is switched off or USIM is removed.

Reference

3GPP TS 24.008 clauses 4.7.7.

12.6.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the authentication and ciphering procedure.

12.6.1.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS rejects the authentication and ciphering procedure.

The SS checks that the UE does not perform normal routing area updating, does not perform periodic routing area updating and does not perform PS detach if switched off.

T3312; set to 10 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 14.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
6	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
7	<-		AUTHENTICATION AND CIPHERING REJECT	
8	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for PS services.
9	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell B.
10		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
11	UE			No ROUTING AREA ~~UPDATING~~UPDATE REQUEST sent to the SS (SS waits 30 seconds).
12	UE			No periodic ROUTING AREA ~~UPDATING~~UPDATE REQUEST sent to the SS (SS waits T3310 .
13	UE			The UE is switched off (see ICS).
14		SS		No DETACH REQUEST sent to the SS (SS waits 30 seconds).
15	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 13.

Specific message contents

None.

12.6.1.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.

After UE receives the AUTHENTICATION AND CIPHERING REJECT message, UE shall:

- not perform normal routing area updating when the RF level of the attached cell is lower than the RF level of the new cell.

- not perform a periodic routing area updating when the timer T3312 expires.

- not perform PS detach when UE is switched off.
- delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- consider the USIM as invalid until power is switched off or USIM is removed.

12.6.1.3 Authentication rejected by the UE

12.6.1.3.1 GMM cause 'MAC failure'

12.6.1.3.1.1 Definition

12.6.1.3.1.2 Conformance requirement

If the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid, the UE shall send AUTHENTICATION AND CIPHERING FAILURE message with the reject cause 'MAC failure' to the System Simulator.

Reference

3GPP TS 24.008 clause 4.7.7.

12.6.1.3.1.3 Test purpose

To test the behaviors of the UE, when the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid.

12.6.1.3.1.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

The MAC (Message Authentication Code) code, which is included in AUTHENTICATION AND CIPHERING REQUEST, is invalid value.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message with reject cause 'MAC failure' to the SS and starts timer T3214.

The SS initiates an identification procedure, upon receipt of a failure message with reject cause 'MAC failure'.

After the identification procedure is complete, the SS re-initiates an authentication and ciphering procedure.

T3360; set to 6 seconds.

T3318; set to 5 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 25.
3	UE			
4				The following messages are sent and shall be received on cell A.
5	UE			The UE is powered up or switched on and initiates an attach (see ICS).
6	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
7	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Invalid Message Authentication Code (MAC).
9	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
10	<-		IDENTITY REQUEST	Identity type = IMSI
11	->		IDENTITY RESPONSE	Mobile identity = IMSI
		SS		
13	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Including PS-CSKN-1
14	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
15		SS		The SS checks the RES value.
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
17	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
18		SS		Cell B is activated and cell A is deactivated.
19	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
20		SS		The value of PS-CKSN is checked
21	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
23	UE			The UE is switched off or power is removed (see ICS).
24	->		DETACH REQUEST	Message is not sent if power is removed. Detach type = 'power switched off, PS detach'
25	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 24.

Specific message contents

None.

12.6.1.3.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with information element specified in the above Expected Sequence when UE is powered on or switched on.
- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS
- start timer T3318.

After UE receives the IDENTITY REQUEST message from SS, UE shall:

- send the IDENTITY RESPONSE message to SS

After UE receives the second AUTHENTICATION AND CIPHERING REQUEST message (containing a valid MAC) from SS, UE shall:

- stop timer T3318, if running
- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS

12.6.1.3.2 GMM cause 'Synch failure'

12.6.1.3.2.1 Definition

12.6.1.3.2.2 Conformance requirement

If the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range, the UE shall send AUTHENTICATION AND CIPHERING FAILURE message with the reject cause 'Synch failure' to the System Simulator.

Reference

3GPP TS 24.008 clause 4.7.7.

12.6.1.3.2.3 Test purpose

To test the behaviors of the UE, when the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range.

12.6.1.3.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

UE sends AUTHENTICATION AND CIPHERING FAILURE message with reject cause 'synch failure' to the SS and starts timer T3214.

SS re-initiates an authentication and ciphering procedure.

T3360; set to 6 seconds.

T3320; set to 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 21.
				The following messages are sent and shall be received on cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. SQN is out of range.
6		SS		The SS starts the timer T3360
7	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause = 'Synch failure' AUTS parameter
8		SS		set new authentication vectors. (re-synchronisation)
9	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Including PS-CKSN-1
10	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
11		SS		The SS checks the RES value.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
14		SS		Cell B is activated, cell A is deactivated.
15	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
16		SS		The value of PS-CKSN is checked
17	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
18	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
19	UE			The UE is switched off or power is removed (see ICS).
20	->		DETACH REQUEST	Message is not sent if power is removed. Detach type = 'power switched off, PS detach'

Step	Direction		Message	Comments
	UE	SS		
21	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 20.

Specific message contents

None.

12.6.1.3.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with information element specified in the above Expected Sequence when UE is powered on or switched on.
- send AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'synch failure' to the SS
- start timer T3320.

After UE receives the second AUTHENTICATION AND CIPHERING REQUEST message from SS, UE shall:

- stop timer T3320, if running.
- send AUTHENTICATION AND CIPHERING RESPONSE message to SS.

12.6.1.3.3 Authentication rejected by the UE / fraudulent network

12.6.1.3.3.1 Definition

12.6.1.3.3.2 Conformance requirement

It can be assumed that the source of the authentication challenge is not genuine (authentication not accepted by the UE) if any of the following occur:

- After sending the AUTHENTICATION & CIPHERING FAILURE message with GMM cause 'MAC failure' the timer T3318 expires;
- Upon receipt of the second AUTHENTICATION & CIPHERING REQUEST message from the network while the T3318 is running and the MAC value cannot be resolved.

If the UE deems that the network has failed in the authentication check, then the UE shall treat the cell where the AUTHENTICATION & CIPERHERING REQUEST message was received as barred, until System Information is refreshed.

Reference

3GPP TS 24.008 clause 4.7.7.6.1.

12.6.1.3.3.3 Test purpose

To test UE treating a cell as barred:

1. when the network sends the second AUTHENTICATION & CIPHERING REQUEST message with invalid MAC code during the timer T3318 is running.

2. when the timer T3318 has expired.

12.6.1.3.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1(RAI-1), cell B in MCC1/MNC1/LAC1/RAC2(RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

Two cells are configured. Cell A transmits with higher power so that the UE attempts an attach procedure to cell A.

During the attach procedure, the SS initiates an authentication and ciphering procedure but it sends an incorrect Message Authentication Code (MAC) value in its AUTHENTICATION AND CIPHERING REQUEST message.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message to the SS indicating authentication failure.

The SS repeats a second time the authentication procedure, which fails again. Next, the UE shall attempt to attach to cell B, which again fails. In this case T3318 expires after the second attempt.

The UE shall treat now both cells as barred and shall not attempt to access the network, even if the user triggers the UE to perform an attach procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS is configures two cells A and B. Cell A transmits with higher power levels, so that the UE selects cell A for attaching. The following messages are sent and shall be received on cell A.
2		UE		The UE is powered up or switched on and initiates an attach procedure.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
4	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
5	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
6	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
7	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
8		SS		SS verifies that the UE does not attempt to access the network for 30s.
9		SS		The SS deactivates cell A and activates cell B.
				UE shall attempt an attach on cell B. The following messages are sent and shall be received on cell B.
10		UE		The UE initiates an attach by MMI or AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
12	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
13	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
14		SS		SS waits T3318 (20s)
15		SS		SS verifies that the UE does not attempt to access the network for 30s.
16		UE		The UE initiates an attach by MMI or AT command.
17		SS		SS verifies that the UE does not attempt to access the network for 30s.

Specific message contents

None.

12.6.1.3.3.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.

After UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

After UE receives the second AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC) from the network during a timer T3318 is running, UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

After the activated cell is changed from cell A to cell B, UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence.

After UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

After a timer T3318 is expired, UE shall:

- not attempt to access the network.

12.6.2 Void

12.7 Identification procedure

The purpose of this procedure is to check that the UE gives its identity as requested by the network. If this procedure does not work, it will not be possible for the network to rely on the identity claimed by the UE.

12.7.1 General Identification

12.7.1.1 Definition

12.7.1.2 Conformance requirement

1) When requested by the network the User Equipment shall send its IMSI.

2) When requested by the network the User Equipment shall send its IMEI as stored in the Mobile Equipment.

3) When requested by the network the User Equipment shall send its IMEISV as stored in the Mobile Equipment.

Reference

3GPP TS 24.008 clauses 4.7.8

12.7.1.3 Test purpose

To verify that the UE sends identity information as requested by the system. The following identities can be requested: IMSI, IMEI and IMEISV.

12.7.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS requests identity information from the UE:

- IMSI
- IMEI
- IMEISV

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 14.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		->	ATTACH COMPLETE	
6		<-	IDENTITY REQUEST	Identity type = IMSI
7		->	IDENTITY RESPONSE	Mobile identity = IMSI
8		<-	IDENTITY REQUEST	Identity type = IMEI
9		->	IDENTITY RESPONSE	Mobile identity = IMEI
10		<-	IDENTITY REQUEST	Identity type = IMEISV
11		->	IDENTITY RESPONSE	Mobile identity = IMEISV
12	UE			The UE is switched off or power is removed (see ICS).
13		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
14	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 13.

Specific message contents

None.

12.7.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.

When SS requests an IMSI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMSI.

When SS requests an IMEI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEI.

When SS requests an IMEISV with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEISV.

12.8 GMM READY timer handling

The READY timer is not applicable for UMTS.

12.8.1 Definition

12.8.2 Conformance requirement

If a READY timer value is received by an UE capable of both UMTS and GSM in the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, then the received value shall be stored by the UE in order to be used at an intersystem change from UMTS to GSM.

Reference

3GPP TS 24.008 clause 4.7.2.1

12.8.3 Test purpose

To verify the functionality of the READY timer.

12.8.4 Method of test

12.8.4.1 Test procedure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

An attach is performed.

T3314; set to 60 seconds

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS). If UE operation mode A not supported set the UE in operation mode C. The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3314 = 60 seconds
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off or power is removed (see ICS).
7	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.8.5 Test requirements

When UE receives the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, UE shall:

- store the received READY timer value.

12.9 Service Request procedure (UMTS Only)

12.9.1 Service Request Initiated by UE Procedure

12.9.1.1 Definition

12.9.1.2 Conformance requirement

UE shall send the Service Request message to the network in order to establish the PS signalling connection for the upper layer signalling or for the resource reservation for active PDP context(s).

Reference

TS 24.008 clauses 4.7.13

TS 23.060 clauses 6.12.1

12.9.1.3 Test purpose

To test the behaviour of the UE if the UE initiates the CM layer service (e.g. SM or SMS) procedure.

12.9.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE in PMM-IDLE state sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receives the SERVICE REQUEST message, the SS performs authentication procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C(see ICS). If UE operation mode C not supported, goto step 12.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling",
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 11.

Specific message contents

None.

12.9.1.5 Test requirements

When the UE has any signalling message (e.g. for SM or SMS) that requires security protection, the UE shall:

- send the SERVICE REQUEST message with service type indicated "signalling".

12.9.2 Service Request Initiated by Network Procedure

12.9.2.1 Definition

12.9.2.2 Conformance requirement

When the UE receives a paging request for PS domain from the network in PMM-IDLE mode, the UE shall send the SERVICE REQUEST message to the network.

Reference

TS 24.008 clauses 4.7.13

TS 23.060 clauses 6.12.2

12.9.2.3 Test purpose

To test the behavior of the UE if the UE receives the paging request for PS domain service from the network.

12.9.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE is in PMM-IDLE state. The SS pages the UE by sending a Paging message to the UE.

b) The UE sends a SERVICE REQUEST message to the SS. Service Type specifies Paging Response. The Service Request is carried over the radio in an RRC Direct Transfer message.

c) After the SS receives the SERVICE REQUEST message from the UE, SS initiates an authentication procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C(see ICS). If UE operation mode C not supported, goto step 12.
2	UE			The UE is powered up or switched in and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	
7	->		SERVICE REQUEST	Service type = "Paging response"
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 11.

Specific message contents

None.

12.9.2.5 Test requirements

When the UE receives a paging request for PS domain from the network in PMM-IDLE mode, the UE shall:

- send the SERVICE REQUEST message with service type indicated "paging response".

12.9.3 Service Request / rejected / Illegal MS

12.9.31 Definition

12.9.3.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "Illegal MS", the UE shall:

1) set the GPRS update status to GU3 ROAMING NOT ALLOWED and enter state GMM DEREGISTRATED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) consider the USIM as invalid for PS service until switched off or the USIM is removed.

Reference

TS 24.008 clauses 4.7.13.4

12.9.3.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "Illegal MS".

12.9.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature, RAI-1 and IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #3(Illegal MS).

c) After the UE receives the SERVICE REJECT message with the cause value #3(Illegal MS), the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.

d) The SS checks that the UE does not initiate an upper-layer signalling until the power of the UE is switched off.

e) The SS checks that the UE does not initiate an upper-layer signalling until the USIM is removed from the UE.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "Illegal MS"
10	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11	SS			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds)
12	UE			The UE is switched off.
13	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
14	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
17	->		ATTACH COMPLETE	
18	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19	->		SERVICE REQUEST	Service type = "signalling"
20	<-		SERVICE REJECT	Reject cause = "Illegal MS"
21	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
22	SS			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds)
23	UE			USIM is removed.
24	->		DETACH REQUEST	
	UE			USIM is inserted.
25	UE			The UE initiates a PS attach, by MMI or by AT command.
26	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
27	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1

Step	Direction		Message	Comments
	UE	SS		
28	->		ATTACH COMPLETE	
29	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
30	->		SERVICE REQUEST	Service type = "signalling"

Specific message contents

None.

12.9.3.5 Test requirements

When the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
- consider the USIM as invalid for PS services until the UE is switched off.
- consider the USIM as invalid for PS service until USIM is removed.

12.9.4 Service Request / rejected / PS services not allowed

12.9.41 Definition

12.9.4.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "PS services not allowed", the UE shall:

1) set the GPRS update state to GU3 ROAMING NOT ALLOWED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) consider the USIM as invalid for PS service until the UE is switched off or until the USIM is removed.

Reference

TS 24.008 clauses 4.7.13.4

12.9.4.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "PS service not allowed".

12.9.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #7(PS services not allowed).

c) After the UE receives the SERVICE REJECT message with the cause value #7(PS services not allowed), the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.

d) The SS checks that the UE does not initiate an upper-layer signalling until the UE is switched off.

e) The SS checks that the UE does not initiate an upper-layer signalling until the USIM is removed from the UE.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "PS services not allowed"
10	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30seconds)
12	UE			The UE is switched off.
13	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
14	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
17	->		ATTACH COMPLETE	
18	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19	->		SERVICE REQUEST	Service type = "signalling"
20	<-		SERVICE REJECT	Reject cause = "PS services not allowed"
21	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
22	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30seconds)
23	UE			USIM is removed.
24	->		DETACH REQUEST	
	UE			USIM is inserted.
25	UE			The UE initiates a PS attach, by MMI or by AT command.
26	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
27	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
28	->		ATTACH COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
29	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
30	->		SERVICE REQUEST	Service type = "signalling"

Specific message contents

12.9.4.5 Test requirements

When the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number
- consider the USIM as invalid for PS services until the UE is switched off.
- consider the USIM as invalid for PS services until USIM is removed.

12.9.5 Service Request / rejected / MS identity cannot be derived by the network

12.9.5.1 Definition

12.9.5.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "MS identity cannot be derived by the network", the UE shall:

1) set the GPRS update states to GU2 NOT UPDATED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) initiate the PS attach procedure automatically.

Reference

TS 24.008 clauses 4.7.13.4

12.9.5.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "MS identity cannot be derived by the network".

12.9.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #9 (MS identity cannot be derived by the network).

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "MS identity cannot be derived by the network"
10	UE			The UE automatically initiates the PS attach procedure.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
13	->		ATTACH COMPLETE	
14	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
15	->		SERVICE REQUEST	Service type = "signalling"
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.5.5 Test requirements

When the UE receives the SERVICE REJECT message with cause "MS identity cannot be derived by the network" UE shall:

- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.

After the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number, UE shall:

- initiate PS attach procedure automatically.

12.9.6 Service Request / rejected / PLMN not allowed

12.9.6.1 Definition

12.9.6.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "PLMN not allowed", the UE shall:

1) delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.
2) set the GPRS update status to GU3 ROAMING NOT ALLOWED.
3) store the LAI or the PLMN identity in the appropriate forbidden list.

Reference

TS 24.008 clauses 4.7.13.4

12.9.6.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "PLMN not allowed".

12.9.6.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 cell B in MCC2/MNC1/LAC1/RAC1.
All two cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #11 (PLMN not allowed).

c) The SS checks that the UE does not initiate an upper-layer signalling until the UE is switched off.

d) The SS checks that the UE does not answer a Page from the SS until the power of the UE is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "PLMN not allowed"
10	UE			The UE stores the LAI or the PLMN identity in the "forbidden PLMN list".
11	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
12	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30second)
13	<-		PAGING TYPE1	Paging order is for PS service
14	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages shall be sent and shall be received on cell B.
15	SS			The SS deactivates cell A and activates cell B.
16	UE			Cell D is preferred by the UE.
17	UE			The UE initiates an attach automatically, by MMI or by AT command.
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Attach result = 'PS only attached'
20	->		ATTACH COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	

Specific message contents

None.

12.9.6.5 Test requirements

When the UE receives the SERVICE REJECT message with cause "PLMN not allowed", UE shall:

- delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.
- store the LAI or the PLMN identity in the appropriate forbidden list, i.e. in the "forbidden PLMN list".

After the UE stores the LAI or the PLMN identity in the appropriate forbidden list, UE shall:

- not perform a PS attach procedure in the same PLMN.

12.9.7a Service Request / rejected / No PDP context activated

12.9.7a.1 Definition

12.9.7a.2 Conformance requirement

If the network rejects a service request procedure with the cause "No PDP context activated", the UE shall:

- deactivate all active PDP contexts.

After the UE deactivates all active PDP contexts, UE shall:

- perform PDP context(s) activation.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7a.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "No PDP context activated".

12.9.7a.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #40 (No PDP context activated).

c) After the UE receives the SERVICE REJECT message, the UE shall send the ACTIVATE PDP CONTEXT REQUEST message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1				The UE is set in UE operation mode C (see ICS).
2				The SS is set in network operation mode II and activates cell A.
3				The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	
5	<-		ATTACH ACCEPT	
6	->		ATTACH COMPLETE	
7	UE			The UE initiates a PS call, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "No PDP context activated"
10	UE			The UE shall deactivate locally all active PDP contexts.
11	UE			The UE initiates a PS call, by MMI or by AT command.
12	->		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
13	<-		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
14	UE			The UE initiates Deactivate PDP Context request, by MMI or by AT command.
15	->		DEACTIVE PDP CONTEXT REQUEST	Deactivate PDP context deactivation
16	<-		DEACTIVE PDP CONTEXT ACCEPT	Accept PDP context deactivation
17	UE			The UE is switched off or power is removed (see ICS).
18	UE			The UE initiates Detach request, by MMI or by AT command.
19	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.7a.5 Test requirements

When the UE receives a SERVICE REJECT message with the cause "No PDP context activated", UE shall:

- deactivate all active PDP context.
- perform PDP context(s) activation.

12.9.7b Service Request / rejected / No Suitable Cells In Location Area

12.9.7b.1 Definition

12.9.7b.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "No Suitable Cells In Location Area", the UE shall:

1) delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.

2) set the GPRS update status to GU3 ROAMING NOT ALLOWED.

3) store the LAI or the PLMN identity in the list of 'forbidden location areas for roaming'.

4) search for a suitable cell in a different location area on the same PLMN.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "No Suitable Cells In Location Area".

12.9.7b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode II.

User Equipment:

The UE has valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a Service request with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The SS activates three cells simultaneously. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	SS			The SS initiates the RRC connection release.
7	UE			The UE initiates a PS call, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "No Suitable Cells In Location Area" The following message are sent and shall be received on cell B.
10	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11	<-		ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Attach result = 'PS only attached'
12	->		ATTACH COMPLETE	
13	UE			The UE is switched off or power is removed (see ICS).
14	->		DETACH REQUEST	

Specific message contents

None.

12.9.7b.5 Test requirements

When the UE receives the SERVICE REJECT message with the cause "No Suitable Cells In Location Area", UE shall:

- delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.
- store the LAI or the PLMN identity in the appropriate forbidden list, i.e. in the " forbidden location areas for roaming ".
- search for a suitable cell in a different location area on the same PLMN.

12.9.8 Service Request / Abnormal cases / Access barred due to access class control

12.9.8.1 Definition

12.9.8.2 Conformance requirement

If the UE access class X is barred, the UE shall:

1) not start Service Request procedure.
2) stay in the current serving cell.
3) applie normal cell reselection process.

If the UE access class X is granted or serving cell is changed, the UE shall:

1) start Service Request procedure.

Reference

TS 24.008 clauses 4.7.13.5.

12.9.8.3 Test purpose

To test the behavior of the UE in case of access class control (access is granted).

12.9.8.4 Method of test

Initial condition

A random access class X (0-15) is selected. The USIM is programmed with this access class X.

Initially, an access class X is barred.

System Simulator:

One cell operating in network operation mode II.

Access class x barred.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS initiates access class X barred. A service request procedure is not performed.

The SS initiates that access class X is not barred. A service request procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is set up Access class x. The access class x is barred in cell A. The UE is powered up or switched on and attempt to initiate an ATTACH.
2	UE			No SERVICE REQUEST sent to SS, as access class X is barred. (SS waits 30 seconds)
3	SS			The access class x is not barred anymore.
4	UE			The UE automatically initiates an attach.
5	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
7	->		ATTACH COMPLETE	
8	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
9	->		SERVICE REQUEST	Service Type = "signalling".
10	<-		AUTHENTICATION AND CIPHERING REQUEST	
11	->		AUTHENTICATION AND CIPHERING RESPONSE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.8.5 Test requirements

UE shall perform the following actions depending on the UE access class X.

Case 1) The UE access class X is barred,

UE shall:

- not start Service Request procedure.
- stay in the current serving cell.
- apply normal cell reselection process.

Case 2) The UE access class X is granted or serving cell is changed,

UE shall:

- start Service Request procedure.

12.9.9 Service Request / Abnormal cases / Routing area update procedure is triggered

12.9.9.1 Definition

12.9.9.2 Conformance requirement

If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, the UE shall:

- abort Service request procedure.
- start routing area update procedure immediately.

Reference

TS 24.008 clause 4.7.13.5

12.9.9.3 Test purpose

To test the behavior of the UE in case of collision between Routing area update procedure and Service request procedure.

12.9.9.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) The UE initiates the routing area update procedure.

c) The UE aborts Service request procedure and performs Routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling"
8	SS			Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
9	UE			The UE aborts Service request procedure.
				The following message are sent and shall be received on cell B.
10	->		ROUTING AREA ~~UPDATING~~UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature
11	<-		ROUTING AREA ~~UPDATING~~UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
12	->		ROUTING AREA ~~UPDATING~~UPDATE COMPLETE	
13	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
14	->		SERVICE REQUEST	Service type = "signalling"
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.9.5 Test requirements

When the routing area update procedure is initiated before the security mode control procedure is completed, UE shall;

- abort a Service request procedure

After the UE aborts the Service request procedure, UE shall;

- perform the routing area updating procedure.

After the UE completes the routing area updating procedure, UE shall;

- restart the Service Request procedure.

12.9.10 Service Request / Abnormal cases / Power off

12.9.10.1 Definition

12.9.10.2 Conformance requirement

When the UE in GMM-SERVICE-REQUEST-INITIATED state is switched off, UE shall:

- perform PS detach procedure.

Reference

TS 24.008 clauses 4.7.13.5

12.9.10.3 Test purpose

To test the behavior of the UE in case of collision between Service request procedure and "powered off".

12.9.10.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

The UE is switched off after initiating a Service request procedure. A PS detach is automatically performed by the UE before power is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling"
8	UE			The UE is powered off and initiates a PS detach (with power off) by MMI or by AT command.
9	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.10.5 Test requirements

When the UE is switched off during the Service Request procedure, UE shall;

- abort the Service request procedure.

After the UE aborts the Service request procedure, UE shall;

- perform the PS detach procedure.

12.9.11 Service Request / Abnormal cases / Service request procedure collision

12.9.11.1 Definition

12.9.11.2 Conformance requirement

When the UE in GMM-SERVICE-REQUEST-INITIATED state receives a DETACH REQUEST message from the network, UE shall:

- perform the PS detach procedure.
- abort Service request procedure.

Reference

TS 24.008 clauses 4.7.13.5

12.9.11.3 Test purpose

To test the behaviour of the UE in case of collision between Service request procedure and PS detach procedure.

12.9.11.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) The SS sends a DETACH REQUEST message to the UE, before the security procedure is not started.

c) After the UE receives the DETACH REQUEST message, the UE aborts the Service request procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	SS			The SS does not respond to SERVICE REQUEST message.
10	<-		DETACH REQUEST	GMM cause = "reattach request"
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
12	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.11.5 Test requirements

When the UE receives a DETACH REQUEST message from the network before the Service request procedure completes, UE shall;

- abort the Service request procedure.

After the UE aborts the Service request procedure, UE shall;

- perform the PS detach procedure.

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CR-Form-v4

CHANGE REQUEST

⌘ **34.123-1 CR 123** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title: ⌘	Modifications and Corrections of GMM test case		
Source: ⌘	SONY		
Work item code: ⌘	TEI	***Date:*** ⌘	29 November 2001
Category: ⌘	**F**	***Release:*** ⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘

- The format for Test requirement is inconsistent with the format for other sections in TS34.123-1.

- It is necessary to change each test case, based on the changes in TS51.010-1 clause 44.

- It is necessary to correct and modify some test cases.

- It is necessary to correct some editorial mistakes.

Summary of change: ⌘

1. Change of the format for Test requirement.

The format for Test requirement is changed in order to keep consistency with the format for other sections in TS34.123-1(for example. MM, CC).

2. Modifications and corrections for each test case.

2.1 For subclause 12.3.2.5 “PS detach / rejected / location area not allowed”

- “Mobile identity = IMSI” is replaced with “Mobile identity = TMSI-1”.
- “DETACH COMPLETE” is replaced with “DETACH ACCEPT”.
- “->” is replaced with “UE”.

2.2 For subclause 12.4.1.4a “Routing area updating / rejected / location area not allowed”

- New steps for MM location updating procedure are inserted next to step 8, 17 and 28 of the Expected sequence.
- “Cell B” is replaced with “Cell A”.

2.3 For subclause 12.4.3.2 “Periodic routing area updating / accepted / T3312 default value”

- The comment in step5 of the Expected sequence is modified.

2.4 For subclause 12.6.1.2 “Authentication rejected by the network”

- The comment in step12 of the Expected sequence is corrected.
- In order to clarify the scenario, the comment in step15 of the Expected sequence is corrected.

2.5 For subclause 12.2.2.6 “Combined PS attach / rejected / PS services not allowed”

- “TMSI status= no valid TMSI available” is removed from step 29 of the Expected sequence.
- The comments in step3 and 29 of the Expected sequence are corrected.
- MM location update procedure and IMSI detach procedure are inserted into the Expected sequence.
- “ATT flag set to 1 “ is added to the initial condition for SS.

2.6 For subclause 12.4.1.2 “Routing area updating / rejected / IMSI invalid / illegal ME”

- MM location updating procedure is inserted into the Expected sequence.

2.7 For subclause 12.4.1.5 “Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes”

- GMM cause table is removed from the conformance requirement.
- The comments in spep9, 12, 15, 18 and 21 are corrected.
- MM location updating procedure is inserted into the Expected sequence.
- Timer value is corrected.
- Initial condition for SS is corrected.

2.8 For subclause 12.4.2.3 “Combined routing area updating / RA only accepted”

- The reference document is corrected.

<u>Test procedure1</u>

- “ITMSI” is replaced with “IMSI”.
- “UPDATING” is replaced with “UPDATE”.

<u>Test procedure2</u>

- “Test procedure” and “Expected sequence” are corrected because there are misinterpretations of the core specification.

2.9 For subclause 12.4.3.4 “Combined periodic routing area updating / no cell available”

- The title of this test case is corrected.
- In order to clarify the test scenario, Specific message contents are added.
- MM location updating procedure is removed from the Expected sequence,

2.10 For subclause 12.2.2.2Combined PS attach / PS only attach accepted”

Test procedure1

- The comment in step4 of the Expected sequence is modified.

Test procedure2

- Test procedure is corrected.
- CS paging procedure in step19 and 20 are removed from the Expected sequence.
- “TMSI status= no valid TMSI available” is removed from step 7, 10, 13, 16, 28, 31, 34 and 37 of the Expected sequence.
- The comments in step3 and 25 of the Expected sequence are corrected.
- “Step12” and “Step13” in the Expected sequence is exchanged each other.
- “Step33” and “Step34” in the Expected sequence is exchanged each other.
- “Step38” and “Step39” in the Expected sequence is exchanged each other.

2.11 For subclause 12.4.2.5a “Combined routing area updating / rejected / roaming not allowed in this location area”

- Conformance requirement is corrected.
- “Test procesure1” is replaced with “Test procedure1”.
- “Test procesure2” is replaced with “Test procedure2”.

Test Procedure 1

- Initial condition for SS is corrected.
- RAI in step 4, 9 and 21 of the Expected sequence are corrected.
- “TMSI status= no valid TMSI available” is removed from step 9 of the Expected sequence.
- MM location updating procedure is inserted after step 18 of the Expected sequence.
- CS paging procedure is removed from the Expected sequence.
- “Mobile identity = IMSI” is replaced with “Mobile identity = TMSI-1”.
- “Mobed” is replaced with “moved”.
- “UPDATING” is replaced with “UPDATE”.

Test Procedure 2

- The Initial condition is corrected.
- RAI in step 4, 9 and 21 of the Expected sequence are corrected.
- “TMSI status= no valid TMSI available” is removed from step 9 of the Expected sequence.

- MM location updating procedure is inserted after step 18 of the Expected sequence.
- “Mobile identity = IMSI” is replaced with “Mobile identity = TMSI-1”.
- “UPDATING” is replaced with “UPDATE”.

2.12 For subclause 12.3.2.4 “PS detach / re-attach requested / accepted”

- P-TMSI signature is removed from step9 of the expected sequence.
- “Mobile identity = TMSI-1” is removed from step9 of the Expected sequence.

2.13 For subclause 12.2.2.5 “Combined PS attach / rejected / PS services and non-PS services not allowed”

- Directions of the step10 and 11 the Expected sequence are corrected.
- The comments in step4, 20 and 22 of the Expected sequence are modified.

2.14 For subclause 12.2.2.8 Combined PS attach / abnormal cases / attempt counter check / miscellaneous reject causes”

- 'IMEI not accepted' is removed from the GMM cause codes in the Conformance requirement.
- “'Switch of on button YES/NO'” is added to the Related ICS/IXIT statements.
- Test procedure is corrected.
- In order to clarify the test scenario, comments in step5, 8, 11 and 14 of the Expected sequence are modified.
- MM location updating procedure is inserted after step16 of the Expected sequence.
- CS paging procedure is removed from step18 and 19 of the Expected sequence.
- The comment in step23 of the Expected sequence is modified.

2.15 For subclause 12.3.1.2 “PS detach / accepted”

- Test procedure is corrected.
- “Step11” should be replaced with “step12”.

2.16 For subclause 12.3.1.8 “PS detach / abnormal cases / change of cell into new routing area”

- The comment in step12 of the Expected sequence is corrected.
- Direction for step16 of the Expected sequence is corrected.

2.17 For subclause 12.4.2.4 “Combined routing area updating / rejected / PLMN not allowed”

- MM location updating procedure is inserted after step28 of the Expected sequence.

2.18 For subclause 12.2.2.4 “Combined PS attach / rejected / IMSI invalid / illegal ME”

- “Conformance requirement”, “Test procedure”, “Expected sequence” and “Test

requirement" are corrected because there are misinterpretations of the core specification.

2.19 For subclause 12.2.1.6 "PS attach / abnormal cases / access barred due to access class control"

- The purpose of Test purpose2 is corrected.

2.20 For subclause 12.4.1.5 "Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes"

- "T3330; 15 seconds" is replaced with "T3330; set to 15 seconds".
- "T3311; set to 15 seconds" is added to the Test procedure.

2.21 For subclause 12.4.2.1 "Combined routing area updating / combined RA/LA accepted"

- "Mobile identity = P-TMSI-2" is replaced with "No P-TMSI".
- "P-TMSI-2" is replaced with "P-TMSI-1".

2.22 For subclause 12.4.2.7 "Combined routing area updating / abnormal cases / attempt counter check / procedure timeout"

- "step23" is replaced with "step24a".
- "step24" is replaced with "step24b".
- Step numbering is corrected.

2.23 For subclause 12.9.7a "Service Request / rejected / No PDP context activated"

- After Step 11 of the Expected sequence, Service request procedure is inserted.

2.24 For subclause 12.2.2.7a "Combined PS attach / rejected / location area not allowed"

- In order to clarify the test scenario, step13 and 14 of the Expected sequence is corrected.
- The comment in step45 of the Expected sequence should be corrected.

Consequences if not approved:	⌘	Inconsistencies with the core specification and editorial mistakes are left.

Clauses affected:	⌘	12		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Affects R99 and REL-4.		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

12 Elementary procedure for Packet Switched Mobility Management

12.1 Applicability, default conditions and default messages

All test cases for PS mobility management apply for all PS mobiles unless otherwise stated in a specific test. Within each test case, the ICS statement indicates whether the test shall be performed for mobiles that can only operate in mode - class A, only in mode - class C , or in both mode - class A and C. For some procedures, the mobile class is of no importance.

Note that only the layer 3 messages are described in the document. The mapping of the layer 3 messages to lower layers and the use of logical channels is not described in the present document.

The terms 'PS/CS mode of operation' and 'PS mode of operation' are not used in the present document with some exceptions. Instead the terms 'UE operation mode A' and 'UE operation mode C' are used.

The default conditions and default message contents not specified in this clause must be set as in "PS default conditions"

Below is a list of the RAI values and the corresponding RAC, LAC and MCC used in the test cases:

RAI-1: MCC1/MNC1/LAC1/RAC1 (Used if only one cell)

RAI-2: MCC2/MNC1/LAC1/RAC1

RAI-3: MCC1/MNC1/LAC2/RAC1

RAI-4: MCC1/MNC1/LAC1/RAC2

RAI-5: MCC1/MNC1/LAC1/RAC3

RAI-6: MCC2/MNC1/LAC2/RAC1

RAI-7: MCC2/MNC1/LAC1/RAC2

If the User Equipment initial condition specifies that the mobile has a valid IMSI but the initial condition does not mention P-TMSI, than that shall be interpreted as that the mobile has no valid P-TMSI.

The tests are based on 3GPP TS 24.008.

12.2 PS attach procedure

This procedure is used to indicate for the network that the IMSI is available for traffic by establishment of a GMM context.

12.2.1 Normal PS attach

The normal PS attach procedure is a GMM procedure used by PS UEs of UE operation mode A or C to IMSI attach for PS services only.

12.2.1.1 PS attach / accepted

12.2.1.1.1 Definition

12.2.1.1.2 Conformance requirement

1) If the network accepts the PS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the UE shall acknowledge the P-TMSI and continue communication with the P-TMSI.

2) If the network accepts the PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

3) If the network accepts the PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the PS attach procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is allocated;

2) P-TMSI / P-TMSI signature is reallocated;

3) Old P-TMSI / P-TMSI signature is not changed.

12.2.1.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI.

2) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS reallocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. The UE will not answer signalling addressed to the old P-TMSI.

3) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the old P-TMSI.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 26.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
6a	->		RRC CONNECTION REQUEST	
6b	<-		RRC CONNECTION SETUP	
6c	->		RRC CONNECTION SETUP COMPLETE	
7	->		SERVICE REQUEST	Service type = "paging response"
7a	<-		RRC CONNECTION RELEASE	
7b	->		RRC CONNECTION RELEASE COMPLETE	
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
10	UE			The UE is powered up or switched on and initiates an attach (see ICS).
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14	<-		GMM INFORMATION	Message sent with P-TMSI-1
14b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
15	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
16	UE			No response from the UE to the request. This is checked for 10 seconds.
17	UE			The UE is switched off or power is removed (see ICS).
18	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
19	UE			The UE is powered up or switched on and initiates an attach (see ICS).
20	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
21	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
22	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE 1 (used for NW-mode II).
22a	->		RRC CONNECTION REQUEST	

Step	Direction		Message	Comments
	UE	SS		
22b	<-		RRC CONNECTION SETUP	
22c	->		RRC CONNECTION SETUP COMPLETE	
23	->		SERVICE REQUEST	Service type = "paging response"
23a	<-		RRC CONNECTION RELEASE	
23b	->		RRC CONNECTION RELEASE COMPLETE	
24	UE			The UE is switched off or power is removed (see ICS).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
26	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 25.

Specific message contents

None.

12.2.1.1.5 Test requirements

At step3, 11 and 20, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

UE shall perform the following actions depending on the Mobile identity in the ATTACH REQUEST message and on the Mobile identity in the ATTACH ACCEPT message.

Case 1) The Mobile identity in the ATTACH REQUEST message is the IMSI and the Mobile identity in the ATTACH ACCEPT message is the P-TMSI.

At step5, UE shall:

- acknowledge the P-TMSI by sending the ATTACH COMPLETE message. ~~Further communication UE - SS is performed by the P-TMSI.~~

Case 2) The Mobile identity in the ATTACH REQUEST message is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the new P-TMSI.

At step13, UE shall:

- acknowledge the new P-TMSI by sending the ATTACH COMPLETE message. ~~Further communication UE - SS is performed by the other P-TMSI.~~

~~Case 3) The Mobile identity in the ATTACH REQUEST is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the same P-TMSI.~~

At step23, UE shall:

- ~~acknowledge the same P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the same P-TMSI.~~respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.2.1.2 PS attach / rejected / IMSI invalid / illegal UE

12.2.1.2.1 Definition

12.2.1.2.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

3) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE', the User Equipment shall delete the LAI.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'illegal UE'.

12.2.1.2.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in

MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).

All three cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Illegal UE'. The SS checks that the UE does not perform PS attach in the same or another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause = 'Illegal UE'.
				The following messages are sent and shall be received on cell B.
6	SS			The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	UE			The UE initiates an attach by MMI or by AT command.
10	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
11	SS			The SS deactivates cell B and activates cell C.
12	UE			Cell C is preferred by the UE.
13	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
14	UE			The UE initiates an attach by MMI or by AT command.
15	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
16	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
17	UE			The UE is powered up or switched on.
18	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
19	UE			The UE initiates an attach (see PICS).
20	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
21	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->		ATTACH COMPLETE	
23	UE			The UE is switched off or power is removed (see ICS).
24	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.2.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.~~

~~- set the PS update state to GU3 ROAMING NOT ALLOWD and delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.~~ At step8, 10, 13 and 15, UE shall:

- ~~-~~not send the ATTACH REQUEST message to SS, even if there is an instruction of attach request from MMI or from AT command.

At srep20, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

12.2.1.3 PS attach / rejected / IMSI invalid / PS services not allowed

12.2.1.3.1 Definition

12.2.1.3.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.3.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS services not allowed' (no valid PS-subscription for the IMSI).

12.2.1.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal attach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach in another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 16.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause = 'PS services not allowed'
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
10	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
16				The SS deactivates cell B and activates cell A.
17	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 15.

Specific message contents

None.

12.2.1.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.~~

~~- set the PS update state to GU3 ROAMING NOT ALLOWD.~~

~~- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.~~At step8, UE shall:

- not perform a PS attach procedure.

At step11, after the UE is switched on or a USIM is replaced, UE shall:

- perform the PS attach procedure.

12.2.1.4 PS attach / rejected / PLMN not allowed

12.2.1.4.1 Definition

12.2.1.4.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall:

   1.1 not perform PS attach when switched on in the same routing area or location area.

   1.2 not perform PS attach when in the same PLMN and when that PLMN is not selected manually.

   1.3 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.4 store the PLMN in the 'forbidden PLMN' list.

2) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall perform PS attach when a new PLMN is entered.

3) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' and if after that the PLMN from which this rejection was received, is manually selected, the User Equipment shall perform a PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.4.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PLMN not allowed'.

12.2.1.4.4 Method of test

12.2.1.4.4.1 Test procedure 1

Initial condition

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2).

All four cells are operating in network operation mode II (in case of UE operation mode A). The PLMN of the four cells should NOT be that of the UE Home PLMN.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PLMN not allowed'. The SS checks that the UE does not perform PS attach if activated in the same routing area or location area and performs PS attach only when a new PLMN is entered.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH REJECT	GMM cause = 'PLMN not allowed'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
7	UE			The UE is switched off.
8		SS		The SS deactivates cell A and activates cell B.
9	UE			The UE is powered up or switched on.
10	UE			Cell B is preferred by the UE.
11	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
12		SS		The SS deactivates cell B and activates cell C.
13	UE			Cell C is preferred by the UE.
14	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell D.
15		SS		The SS deactivates cell C and activates cell D.
16	UE			Cell D is preferred by the UE.
17	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
18	UE			The UE initiates an attach automatically, by MMI or by AT command.
19		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
20		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
21		->	ATTACH COMPLETE	
22	UE			The UE is switched off or power is removed (see ICS).
23		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.1.4.4.2 Test procedure 2

Initial condition

System Simurator:

One cell operating in network operation mode II. The PLMN of the cell should NOT be that of the Mobile Station Home PLMN.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1. UE is Idle Updated.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PLMN not allowed'. The subscribers access rights is changed to allow PS attach. Then the PLMN from which this rejection was received is manually selected and the SS check that a PS attach is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C or A (see PICS).
2	UE			The UE is powered up or switched on and initiates an attach (see PICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	GMM cause = 'PLMN not allowed'
5	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
6	UE			The current PLMN is selected manually.
7	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
8	UE			The UE initiates an attach automatically, by MMI or by AT command.
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see PICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.4.5 Test requirements

Test requirements for test procedure 1

At step4, when the UE is powered on or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered on or switched on~~.

~~check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.~~

- delete the stored RAI, PS CKSN, P-TMSI and P-TMSI signature.

- store the PLMN in the 'forbidden PLMNAt step6, UE shall:

- not perform PS attach procedure.

UE shall list'

perform the following actions depending on the PLMN or the routing area or the location area

Case 1) UE is in the same routing area or location area when the power is switched on,

At step11, UE shall:

- not perform PS attach procedure.

Case2) UE is in the same PLMN, and this PLMN is not selected manually

At step14, UE shall:

- not perform PS attach procedure.

Case3) UE is in a new PLMN.

At step19, UE shall:

- perform the PS attach procedure.

Test requirements for test procedure 2

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step5, UE shall:

- not perform PS attach procedure.

At step9, when the UE is in the new PLMN, and this PLMN is selected manually, UE shall

- perform the PS attach procedure. Case4) UE is in the new PLMN, and this PLMN is selected manually

UE shall

perform PS attach.

12.2.1.5a PS attach / rejected / roaming not allowed in this location area

12.2.1.5a.1 Definition

12.2.1.5a.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment shall:

1.1 not perform PS attach when in the same location area.

1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

1.3 store the LA in the 'forbidden location areas for roaming' list.

1.4 perform PS attach when a new location area is entered.

1.5 Periodically search for its HPLMN.

2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.

3) The UE shall be capable of storing at least 6 entries in the list of 'Forbidden location areas for roaming'.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.5a.3 Test purpose

Test purpose 1

To test that on receipt of a rejection using the 'roaming not allowed in this location area' cause code, the UE ceases trying to attach on that location area. Successful PS attach procedure is possible in other location areas.

Test purpose 2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

Test purpose 3

To test that at least 6 entries can be held in the list of 'forbidden location areas for roaming' (the requirement in 3GPP TS 24.008 is to store at least 10 entries. This is not fully tested by the third procedure).

Test purpose 4

To test that if a cell of the Home PLMN is available then the UE returns to it in preference to any other available cell.

12.2.1.5a.4 Method of test

12.2.1.5a.4.1 Test procedure 1

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN), cell B in

MCC2/MNC1/LAC2/RAC1 (RAI-6, Not HPLMN) and cell C in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN).

All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. A new attempt for a PS attach is not possible. Successful PS attach / detach procedures are performed in another location area. A new attempt for a PS attach is performed in the 1st location area. This attempt shall not succeed, as the LA is on the forbidden list.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 19.
2		SS		The SS activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
5		<-	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
7		SS		The SS Deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
10	UE			The UE initiates an attach automatically, by MMI or by AT command.
11		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6
13		->	ATTACH COMPLETE	
14	UE			The UE initiates a PS detach (without power off) by MMI or by AT command .
15		->	DETACH REQUEST	Detach type = 'normal detach, PS detach'
16		<-	DETACH ACCEPT	
				The following messages are sent and shall be received on cell C.
17		SS		The SS deactivates cell B and activates cell C.
18	UE			Cell C is preferred by the UE.
19	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds). The UE is switched off or power is removed (see ICS)
20	UE			UE is switched off.
21		SS		The SS deactivates cell C.
22	UE			The UE is set in UE operation mode A if supported (see ICS) and the test is repeated from step 2 to step 20.

12.2.1.5a.4.2 Test procedure 2

Initial condition

System Simulator:

One cell in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN) operating in network operation mode II.

User Equipment:

TheUE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 s and switched on again. The SS check that a PS attach is possible on the cell on which the PS attach had been rejected.

If USIM removal is possible without switching off:The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. The USIM is removed and inserted in the UE. The SS check that a PS attach is possible on the cell on which the PS attach had been rejected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			If UE operation mode C is supported, the UE is set in UE operation mode C (see PICS). If UE operation mode C is not supported, the UE is set in UE operation mode A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
4	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
5	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
6	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
7	UE			The UE is powered up or switched on and initiates an attach (see ICS).
8	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.1.5a.4.3 Test procedure 3

Initial condition

System Simulator:

Six cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-3, Not HPLMN), cell C in MCC2/MNC1/LAC3/RAC1 (Not HPLMN), cell D in MCC2/MNC1/LAC4/RAC1 (Not HPLMN), cell E in MCC2/MNC1/LAC5/RAC1 (Not HPLMN), cell F in MCC2/MNC1/LAC6/RAC1 (Not HPLMN).
All six cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. This is done for 6 different location areas. Then the SS checks that the UE does not attempt to perform an attach procedure on the non-allowed location areas.

Different types of UE may use different methods to periodically clear the list of forbidden areas (e.g. every day at 12am) for roaming. If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS is set in network operation mode II and activates cell A.
2		UE		The UE is set in UE operation mode C (see ICS).
3		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
5	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		UE		Cell B is preferred by the UE.
9		UE	Registration on CS	See TS 34.108 This is applied only in case of UE operation mode A. Parameter mobile identity is IMSI.
10		UE		The UE initiates an attach automatically, by MMI or by AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
13		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
14		SS		The SS deactivates cell B and activates cell C.
15		UE		Cell C is preferred by the UE.
16		UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
17		UE		The UE initiates an attach automatically, by MMI or by AT command.
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
20		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell D.
21		SS		The SS deactivates cell C and activates cell D.
22		UE		Cell D is preferred by the UE.
23		UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
24		UE		The UE initiates an attach automatically, by MMI or by AT command.
25	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
26	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'

Step	Direction		Message	Comments
	UE	SS		
27	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell E.
28	SS			The SS deactivates cell D and activates cell E.
29	UE			Cell E is preferred by the UE.
30	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
31	UE			The UE initiates an attach automatically, by MMI or by AT command.
32	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
33	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
34	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell F.
35	SS			The SS deactivates cell E and activates cell F.
36	UE			Cell F is preferred by the UE.
37	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
~~37~~38	UE			The UE initiates an attach automatically, by MMI or by AT command.
~~38~~39	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
~~39~~40	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
~~40~~41	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
				The following messages are sent and shall be received on cell E.
~~41~~42	SS			The SS deactivates cell F and activates cell E.
~~42~~43	SS			Cell E is preferred by the UE.
~~43~~44	UE			The UE initiates an attach automatically, by MMI or by AT command.
~~44~~45	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
~~45~~46	SS			The SS deactivates cell E and activates cell C.
~~46~~47	SS			Cell C is preferred by the UE.
~~47~~48	UE			The UE initiates an attach automatically, by MMI or by AT command.
~~48~~49	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell A.
~~49~~50	SS			The SS deactivates cell C and activates cell A.
~~50~~51	SS			Cell A will be preferred by the UE.
~~51~~52	UE			The UE initiates an attach automatically, by MMI or by AT command.
~~52~~53	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).

12.2.1.5a.4.4 Test procedure4

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (not HPLMN, RAI-2) and cell B in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area A second cell belonging to the HPLMN is activated. It is checked that the UE returns to its HPLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
5		<-	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
7		SS		Activate cell B.
8	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
9	UE			The UE initiates an attach automatically, by MMI or by AT command.
10		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
12		->	ATTACH COMPLETE	
13	UE			The UE is switched off or power is removed (see ICS).
14		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.5a.5 Test requirements

Test requirements for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.~~

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform the PS attach procedure ~~when UE is in the same location area~~.

~~- delete the stored RAI, PS CKSN, P TMSI and P TMSI signature.~~

~~- store the LA in the 'forbidden location areas for roaming' list.~~

At step11, when the new location area is entered, UE shall:

- perform the PS attach ~~when a new location area is entered~~procedure.

At step19, when the rejected location area is entered, UE shall

- not perform PS attach procedure.

~~- search for its HPLMN periodically.~~

~~When Switched off or when the USIM is removed,~~

~~UE shall:~~

~~- reset the 'forbidden location areas for roaming' list.~~

Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step5, after the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step9, when the UE is switched off or USIM is replaced, UE shall:

- perform the PS attach procedure.

Test requirements for Test procedure3

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, 13, 20, 27, 34 and 41, after the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step11, 18, 25, 32 and 39 , UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step45, 49 and 53, UE shall:

- not perform PS attach procedure.

Test requirements for Test procedure4

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step10, when a new location area is entered, UE shall:

- perform the PS attach procedure.

12.2.1.5b PS attach / rejected / No Suitable Cells In Location Area

12.2.1.5b.1 Definition

12.2.1.5b.2 Conformance requirement

(1) If the network rejects a PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

1.1 not perform PS attach when in the same location area.

1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

1.3 store the LA in the 'forbidden location areas for roaming' list.

1.4 perform PS attach when a new location area is entered.

Reference

3GPP TS 24.008 clauses 4.7.3.1.

12.2.1.5b.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'No Suitable Cells In Location Area'.

12.2.1.5b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform PS attach procedure in that cell.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
	SS			The SS activates three cells simultaneously. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	GMM cause = 'No Suitable Cells In Location Area'
5	SS			The SS initiates the RRC connection release. The following message are sent and shall be received on cell B.
6	UE		Registration on CS	See TS 34.108
7	UE			The UE initiates an attach automatically, by MMI or by AT command.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
9	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
10	->		ATTACH COMPLETE	
11	UE			The UE is switched off or power is removed (see ICS).
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.5b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when the UE is powered up or switched on~~.

~~- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.~~

~~- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.~~

~~search for a suitable cell in a different location area on the same PLMN.~~At step8, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.2.1.6 PS attach / abnormal cases / access barred due to access class control

12.2.1.6.1 Definition

12.2.1.6.2 Conformance requirement

1) The UE shall not perform PS attach procedure, but stays in the current serving cell and applies normal cell reselection process.

2) The User Equipment shall perform the PS attach procedure when:

   2.1 Access is granted.

   2.2 Cell is changed.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.6.3 Test purpose

Test purpose1

To test the behaviour of the UE in case of access class control (access is granted).

Test purpose2

To test the behaviour of the UE in case of access class control (~~access is granted~~Cell is changed).

12.2.1.6.4 Method of test

12.2.1.6.4.1 Test procedure1

Initial condition

A random access class x (0-15) is selected. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred.

System Simulator:

One cell operating in network operation mode II.
Access class x barred.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS indicates access class x barred. A PS attach procedure is not performed.

The SS indicates that access class x is not barred. A PS attach procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is programmed with access class x.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 12.
3	UE			The UE is powered up or switched on and attempts to initiate an attach (see ICS).
4	UE			No ATTACH REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
5	SS			The access class x is not barred anymore.
6	UE			The UE automatically initiates a PS attach.
7	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
8	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	->		ATTACH COMPLETE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
12	SS			The SS is set in network operation mode II.
13	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 2 to step 11.

12.2.1.6.4.2 Test procedure2

Initial condition

A random access class x (0-15) is selected. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell A.

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x barred, cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x not barred.
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-2 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS indicates access class x barred. A PS attach procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A PS attach procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is programmed with access class x.
		SS		The following messages are sent and shall be received on cell A.
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is set in UE operation mode C (see ICS).
4	UE			The UE is powered up or switched on and attempts to initiate an attach (see ICS).
5	UE			No ATTACH REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
6		SS		Activate cell B.
7	UE			The UE automatically initiates an attach.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
10	->		ATTACH COMPLETE	
11	UE			The UE is switched off or power is removed (see ICS).
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.6.5 Test requirements

Test requirements for Test procedure1

At step4, when the UE access class x is barred, UE shall:

~~perform the following actions depending on the UE access class X.~~

~~- Case 1) The UE access class X is barred,~~

~~- UE shall:~~

- not perform a PS attach procedure.

~~- stay in the current serving cell.~~

~~- apply normal cell reselection process.~~

At step7, when ~~- Case 2) T~~the UE access class ~~X~~ x is granted ~~or serving cell is changed~~,

UE shall:

- ~~-~~initiate the PS attach procedure.

Test requirements for Test procedure2

At step5, when the UE access class x is barred, UE shall:

- not perform a PS attach procedure.

At step8, when the serving cell is changed, UE shall:

- initiate the PS attach procedure.

~~-~~

12.2.1.7 PS attach / abnormal cases / change of cell into new routing area

12.2.1.7.1 Definition

12.2.1.7.2 Conformance requirement

When a change of cell into a new routing area is performed before ATTACH ACCEPT message is received by the UE, the UE shall abort the PS attach procedure and re-initiate it immediately.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.7.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.7.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The ATTACH ACCEPT message is delayed from the SS. The UE performs a cell reselection to a cell in a new routing area. The UE shall re-initiate a PS attach procedure in the new routing area.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		SS		No response to the ATTACH REQUEST message is given by the SS.
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the UE.
7	UE			The UE automatically re-initiates the attach in the new cell.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
9	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-4
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected sequence.

At step8, when a change of cell into a new routing area is performed before ATTACH ACCEPT message or ATTACH REJECT message is received by the UE, UE shall:

- abort ~~a~~ the PS attach procedure and re-initiate the PS attach procedure immediately with new information elements. ~~when a change of cell into a new routing area is performed before ATTACH ACCEPT or ATTACH REJECT message is received by the UE~~.

~~re-initiate a PS attach procedure immediately with new information elements.~~

12.2.1.8 PS attach / abnormal cases / power off

12.2.1.8.1 Definition

12.2.1.8.2 Conformance requirement

When power is switched off before ATTACH ACCEPT message is received by the UE, the UE shall abort the PS attach procedure and perform a PS detach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.

12.2.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.8.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE is switched off after initiating an attach procedure. A PS detach is automatically performed by the UE before power is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 7.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS			No response to the ATTACH REQUEST message is given by the SS.
5	UE			The UE is powered off and initiates a PS detach (with power off) by
6	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
7	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 6.

Specific message contents

None.

12.2.1.8.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step6, ~~When~~ when power is switched off before ATTACH ACCEPT message is received,

UE shall:

- abort the PS attach procedure and perform the PS detach procedure.

12.2.1.9 PS attach / abnormal cases / PS detach procedure collision

12.2.1.9.1 Definition

12.2.1.9.2 Conformance requirement

1) When a DETACH REQUEST message is received by the UE (any cause except re-attach) while waiting for an ATTACH ACCEPT message, the UE shall terminate the PS attach procedure and continue with the PS detach procedure.

2) When a DETACH REQUEST message is received by the UE (cause re-attach) while waiting for an ATTACH ACCEPT message, the UE shall ignore the PS detach procedure and continue with the PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS does not answer the PS attach procedure, but initiates a PS detach procedure (any cause except re-attach). The UE shall terminate the PS attach procedure and continue with the PS detach procedure**.**

The UE initiates a PS attach procedure. The SS does not answer the PS attach procedure, but initiates a PS detach procedure (cause re-attach). The UE shall ignore the PS detach procedure and continue with the PS attach.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	<-		DETACH REQUEST	Detach type = 're-attach not required'
6	->		DETACH ACCEPT	
7	UE			The UE initiates the attach procedure by MMI or AT command.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
9	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 're-attach required'
11	UE			The UE ignores the DETACH REQUEST message and continue with the attach procedure.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

UE shall perform the following actions depending on the Detach type in the DETACH REQUEST message.

Case1) Detach type = 're-attach not required' ~~GMM cause is not re-attach~~

At step6, ~~When~~ when ~~a~~ the DETACH REQUEST message is received by the UE while waiting for an ATTACH ACCEPT message,

UE shall:

- terminate the PS attach procedure and continue with the PS detach procedure.

Case2) Detach type = 're-attach required' ~~GMM cause is re-attach~~

At step11, ~~When~~ when ~~a~~ the DETACH REQUEST message is received by the UE while waiting for an ATTACH ACCEPT message,

UE shall:

- ignore the PS detach procedure and continue with the PS attach procedure.

12.2.2 Combined PS attach

12.2.2.1 Combined PS attach / PS and non-PS attach accepted

12.2.2.1.1 Definition

12.2.2.1.2 Conformance requirement

1) If the network accepts the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the UE shall acknowledge the P-TMSI and continue communication with the P-TMSI.

2) If the network accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

3) If the network accepts the combined PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the previously used P-TMSI, the UE shall continue communication with the previously used P-TMSI.

4) If the network accepts the combined PS attach procedure and determines that IMSI shall be used in CS operations, the UE shall continue communication with the IMSI for CS operations.

5) If the network accepts the combined PS attach procedure and determines that a TMSI shall be used in CS operations, the UE shall continue communication with the TMSI for CS operations.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.1.3 Test purpose

To test the behaviour of the UE if the network accepts the PS attach procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is allocated;

2) P-TMSI / P-TMSI signature is reallocated;

3) Old P-TMSI / P-TMSI signature is not changed;

4) Mobile terminating CS call is allowed with IMSI;

5) Mobile terminating CS call is not allowed with TMSI.

12.2.2.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No

Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the IMSI is used.

2) The UE is CS paged in order to verify that the IMSI is used for CS calls.

3) The UE is PS paged in order to verify that the new P-TMSI is used for PS services.

4) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS allocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI and a new TMSI. The UE acknowledge the P-TMSI and the TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the new TMSI is used. The UE is CS paged in order to verify that the new TMSI is used for CS services.

5) The UE is PS paged in order to verify that the new P-TMSI is used for PS services. The UE will not answer signalling addressed to the old P-TMSI.

6) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the previously used P-TMSI.

7) The UE is PS paged in order to verify that the previously used P-TMSI is used for PS services.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity =IMSI Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
7	->		RRC CONNECTION REQUEST	
8	<-		RRC CONNECTION SETUP	
9	->		RRC CONNECTION SETUP COMPLETE	
10	->		PAGING RESPONSE	Mobile identity = IMSI
11	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
12	->		RRC CONNECTION RELEASE COMPLETE	
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services
13a	->		RRC CONNECTION REQUEST	
13b	<-		RRC CONNECTION SETUP	
13c	->		RRC CONNECTION SETUP COMPLETE	
14	->		SERVICE REQUEST	service type = "paging response"
14a	<-		RRC CONNECTION RELEASE	
14b	->		RRC CONNECTION RELEASE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
17	UE			The UE is powered up or switched on and initiates an attach (see ICS).
18	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature TMSI status = no valid TMSI available Routing area identity = RAI-1
19	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
20	->		ATTACH COMPLETE	
21	<-		GMM INFORMATION	
21b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
22	<-		PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services.
23	->		RRC CONNECTION REQUEST	
24	<-		RRC CONNECTION SETUP	
25	->		RRC CONNECTION SETUP COMPLETE	
26	->		PAGING RESPONSE	Mobile identity = TMSI-1

Step	Direction		Message	Comments
	UE	SS		
27		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
28		->	RRC CONNECTION RELEASE COMPLETE	
29		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services
29a		->	RRC CONNECTION REQUEST	
29b		<-	RRC CONNECTION SETUP	
29c		->	RRC CONNECTION SETUP COMPLETE	
30		->	SERVICE REQUEST	service type = "paging response"
30a		<-	RRC CONNECTION RELEASE	
30b		->	RRC CONNECTION RELEASE COMPLETE	
31		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services
32	UE			No response from the UE to the request. This is checked for 10 seconds.
33	UE			The UE is switched off or power is removed (see ICS).
34		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
35	UE			The UE is powered up or switched on and initiates an attach (see ICS).
36		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
37		<-	ATTACH ACCEPT	No new mobile identity assigned. TMSI and P-TMSI not included. Attach result = 'Combined PS / IMSI attached' P-TMSI-3 signature Routing area identity = RAI-1
38		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services
38a		->	RRC CONNECTION REQUEST	
38b		<-	RRC CONNECTION SETUP	
38c		->	RRC CONNECTION SETUP COMPLETE	
39		->	SERVICE REQUEST	service type = "paging response"
39a		<-	RRC CONNECTION RELEASE	
39b		->	RRC CONNECTION RELEASE COMPLETE	
40	UE			The UE is switched off or power is removed (see ICS).
41		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

Case 1) SS accept the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI.

At step5, UE shall

- ~~acknowledge the P-TMSI~~ send the ATTACH COMPLETE message~~and continue communication with the P-TMSI.~~.

At step10, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step14, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

Case 2) SS accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI and TMSI..

At step20, UE shall:

- ~~acknowledge the new P-TMSI~~ send the ATTACH COMPLETE message~~and continue communication with the new P-TMSI~~.

At step26, when the UE receives the paging message for CS domain with Mobile identity = TMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step30, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

Case 3) SS accepts the combined PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the previously used P-TMSI.

At step39, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

~~UE shall:~~

- ~~continue communication with the previously used P-TMSI.~~

~~Case 4) SS accepts the combined PS attach procedure and determines that IMSI shall be used in CS operations.~~

~~UE shall:~~

- ~~continue communication with the IMSI for CS operations.~~

~~Case 5) SS accepts the combined PS attach procedure and determines that a TMSI shall be used in CS operations.~~

~~UE shall:~~

- ~~continue communication with the TMSI for CS operations.~~

12.2.2.2 Combined PS attach / PS only attach accepted

12.2.2.2.1 Definition

12.2.2.2.2 Conformance requirement

1) If the network accepts the combined PS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the UE the User Equipment shall delete the stored TMSI, LAI and CKSN. The User Equipment shall consider USIM invalid for non-PS services until power is switched off or USIM is removed.

2) If the network accepts the combined PS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the UE, an UE operation mode A UE may perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.2.3 Test purpose

Test propose1

To test the behaviour of the UE if the network accepts the PS attach procedure with indication PS only, GMM cause 'IMSI unknown in HLR'.

Test porpose2

To test the behaviour of the UE if the network accepts the PS attach procedure with indication PS only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

12.2.2.2.4 Method of test

12.2.2.2.4.1 Test porpose1

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication UE - SS is performed by the P-TMSI. CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature GMM cause = 'IMSI unknown in HLR' Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
7	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.2.2.4.2 Test porpose2

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Automatic MM IMSI attach procedure for UE operation mode A UE Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE sends an ATTACH REQUEST message. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS returns a ROUTING AREA UPDATE ACCEPT message. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. The ROUTING AREA UPDATE ~~This~~ procedure is repeated four times. An UE operation mode A UE may then perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. ~~CS services are not possible as an IMSI attach procedure is not performed.~~

Expected Sequence

Dependent whether the option 'Automatic MM IMSI attach procedure for UE operation mode A UE' is supported or not, the steps 1-22 or 23-53 apply depending on manufacturer (see ICS).

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A and no automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
5	->		ATTACH COMPLETE	
7	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 ~~TMSI status = no valid TMSI available~~
8	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
10	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1 ~~TMSI status = no valid TMSI available~~
11	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
12	~~SS~~->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1~~The SS verifies that the time between the requests are T3311~~
13	~~->~~ SS		~~ROUTING AREA UPDATE REQUEST~~	The SS verifies that the time between the previous routing area update accept and routing area update request is T3311. ~~Update type = 'Combined RA / LA updating with IMSI attach'~~ ~~P-TMSI-4 signature~~ ~~Routing area identity = RAI-1~~ ~~TMSI status = no valid TMSI available~~

Step	Direction		Message	Comments
	UE	SS		
14		<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
16		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 ~~TMSI status = no valid TMSI available~~
17		<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
18-2019~~20~~	(void) ~~<-~~		~~PAGING TYPE1~~	~~Mobile identity = IMSI~~ ~~Paging order is for CS services~~. ~~The UE shall not initiate an RRC connection. This is checked during 3 seconds.~~
~~20~~	~~UE~~			
21	UE			The UE is switched off or power is removed (see ICS).
22		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'. Stop the sequence.
23	UE			Automatic MM IMSI attach procedure is indicated (see ICS).
24	UE			The UE is powered up or switched on and initiates an attach (see ICS).
25		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted
26		<-	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
28		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 ~~TMSI status = no valid TMSI available~~
29		<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
31		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1 ~~TMSI status = no valid TMSI available~~

Step	Direction		Message	Comments
	UE	SS		
32	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
33	~~SS ->~~		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1~~The SS verifies that the time between the requests are T3311~~
34	~~->~~ SS		~~ROUTING AREA UPDATE REQUEST~~	The SS verifies that the time between the previous routing area update accept and routing area update request is T3311.~~Update type = 'Combined RA / LA updating with IMSI attach'~~ ~~P-TMSI-4 signature~~ ~~Routing area identity = RAI-1~~ ~~TMSI status = no valid TMSI available~~
35	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
37	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 ~~TMSI status = no valid TMSI available~~
38	SS ~~<-~~		~~ROUTING AREA UPDATE ACCEPT~~	The SS verifies that the time between the previous routing area update accept and routing area update request is T3311. ~~No new mobile identity assigned.~~ ~~P No new mobile identity assigned.~~ ~~P-TMSI not included.~~ ~~Update result = 'RA updated'~~ ~~P-TMSI-6 signature~~ ~~Routing area identity = RAI-1~~ ~~GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)~~
39	~~SS~~<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen) ~~The SS verifies that the time between the requests are T3311~~
40	UE			An automatic MM IMSI attach procedure is initiated.
41	~~->~~UE		Registration on CS~~RRC CONNECTION REQUEST~~	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI
42-48~~42~~	(void) ~~<-~~		~~RRC CONNECTION SETUP~~	

Step	Direction		Message	Comments
	UE	SS		
~~43~~	~~->~~		~~RRC CONNECTION SETUP COMPLETE~~	
~~44~~	~~->~~		~~LOCATION UPDATING REQ~~	~~Location updating type = IMSI attach.~~
~~45~~	~~<-~~		~~LOCATION UPDATING ACC~~	~~The SS allocates a new TMSI.~~
~~46~~	~~->~~		~~TMSI REALLOCATION COMP~~	~~Location updating type = IMSI attach.~~
~~47~~	~~<-~~		~~RRC CONNECTION RELEASE~~	~~After sending of this message, the SS waits for disconnection of the CS signalling link.~~
~~48~~	~~->~~		~~RRC CONNECTION RELEASE COMPLETE~~	
49	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
50	->		RRC CONNECTION REQUEST	
51	<-		RRC CONNECTION SETUP	
52	->		RRC CONNECTION SETUP COMPLETE	
53	->		PAGING RESPONSE	Mobile identity = TMSI-1
54	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
55	->		RRC CONNECTION RELEASE COMPLETE	
56	UE			The UE is switched off or power is removed (see ICS).
57	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.2.2.5 Test requirements

Test requirements for Test porpose1

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the Combined PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step7, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

~~Case1) GMM cause = 'IMSI unknown in HLR'~~

~~UE shall~~

~~delete stored TMSI, LAI, and ciphering key sequence number.~~

~~consider USIM invalid for non-PS service until power is switching off or USIM is removed.~~

~~Case2) GMM cause = 'MSC temporarily not reachable' or 'Network failure' or 'Congestion',~~

~~UE shall:~~

~~stop the timer T3310(if running), and shall increment the routing area update attempt counter.~~

~~perform the following actions depending on the conditions described below.~~

~~Case 2-1) the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell and the GMM update status is equal to GU1 UPDATED:~~

~~UE shall~~

~~keep the GMM update status GU1 UPDATED.~~

~~- change state to GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.~~

~~- start timer T3311. When timer T3311 expires, the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach" is triggered again.~~

~~- Case 2 2) the routing area updating attempt counter is greater than or equal to 5~~

~~- UE shall~~

~~- start timer T3302 and change state to GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM~~

Test requirements for Test porpose2

Case 1) UE does not support Automatic MM IMSI attach procedure.

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, 10, 12 and 16, when the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell, UE shall:

- perform the combined routing area update procedure indicating “combined RA/LA updating with IMSI attach”.

Case 2) UE supports Automatic MM IMSI attach procedure.

At step25, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with information elements specified in the above Expected Sequence.

At step28, 31, 33 and 37, when the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell, UE shall:

- perform the combined routing area update procedure indicating “combined RA/LA updating with IMSI attach”.

At step41, UE shall:

- perform MM location updating procedure.

At step53, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

12.2.2.3 Combined PS attach / PS attach while IMSI attach

12.2.2.3.1 Definition

12.2.2.3.2 Conformance requirement

If the PS UE is already attached for non-PS services by the MM specific attach procedure, but wants to perform an attach for PS services, the combined PS attach procedure is performed.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.3.3 Test purpose

To test the behaviour of the UE if PS attach performed while IMSI attached.

12.2.2.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I. ATT flag is set.

User Equipment:

The UE has a valid TMSI-1, P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE is forced to register for CS services but not to PS services. The SS verifies that the UE does not respond to paging messages for PS domain. Then the UE is triggered to perform the PS attach procedure and the SS verifies that it responds to PS paging messages.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS) and configured not to perform an automatic PS attach at switch on.
2	UE			The UE is powered up or switched on. No PS attach is performed (see ICS).
3			Registration on CS	See TS 34.108 Location updating type = IMSI attach. The SS allocates TMSI-1
4		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
5	UE			No response from the UE to the request. This is checked for 10 seconds.
6	UE			The UE is triggered to perform a PS attach.
7		->	ATTACH REQUEST	Attach type = 'PS attach while IMSI attached' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
8		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' No new mobile identity assigned. TMSI and P-TMSI not included P-TMSI-2 signature Routing area identity = RAI-1
9		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10		->	RRC CONNECTION REQUEST	
11		<-	RRC CONNECTION SETUP	
12		->	RRC CONNECTION SETUP COMPLETE	
13		->	SERVICE REQUEST	service type = "paging response"
14		<-	RRC CONNECTION RELEASE	
15		->	RRC CONNECTION RELEASE COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.3.5 Test requirements

UE is already attached for non-PS service with the MM specific attach procedure.

At step5, UE shall:

- not respond to the paging message for PS domain.

At step7, when the UE is requested to attach for PS services, UE shall:

- ~~-~~perform the combined PS attach procedure ~~when UE is requested to attach for PS services~~.

At step13, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.2.2.4 Combined PS attach / rejected / IMSI invalid / illegal ME

12.2.2.4.1 Definition

12.2.2.4.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall delete the stored TMSI, LAI, CSKN, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

~~3) The UE in the UE operation mode A shall perform an MM IMSI attach procedure.~~

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.4.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure of the UE with the cause 'Illegal ME'.

12.2.2.4.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI-1, P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Illegal ME'. The SS checks that the UE does not perform PS attach in the same or another PLMN. CS services are not possible as the USIM is blocked for CS services. PS services are not possible as the USIM is blocked for PS services. ~~An UE operation mode A UE shall perform an MM IMSI attach.~~

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'GPRS attach while IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted
5	<-		ATTACH REJECT	GMM cause 'Illegal ME'.
6	UE		PAGING TYPE1	Mobile identity = TMSI-1Paging order is for CS services.~~An automatic MM IMSI attach procedure is initiated.~~
7	UE		~~Registration on CS~~	The UE shall not initiate an RRC connection. This is checked during 3 seconds.~~See TS.34.108~~ ~~Location updating type = IMSI attach.~~ ~~The SS allocates TMSI-2.~~
8	<-		PAGING TYPE1	Mobile identity = ~~P-TMSI-1~~IMSI Paging order is for ~~PS~~ CS services
9	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.~~No response from the UE to the request. This is checked for 10 seconds.~~
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1~~2~~ Paging order is for ~~CS~~ PS services.
11	~~->~~UE		~~RRC CONNECTION REQUEST~~	No response from the UE to the request. This is checked for 10 seconds.
~~12~~	~~->~~		~~RRC CONNECTION SETUP~~	
~~13~~	~~<-~~		~~RRC CONNECTION SETUP COMPLETE~~	
~~14~~	~~->~~		~~PAGING RESPONSE~~	~~Mobile identity = TMSI-2~~
~~15~~	~~<-~~		~~RRC CONNECTION RELEASE~~	~~After sending of this message, the SS waits for disconnection of the CS signaling link.~~
~~16~~	~~->~~		~~RRC CONNECTION RELEASE COMPLETE~~	
				The following messages are sent and shall be received on cell B.
12		SS		The SS deactivates cell A and activates cell B.
13	UE			Cell B is preferred by the UE.
14	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
15	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
				The following messages are sent and shall be received on cell ~~B~~C.
17		SS		The SS deactivates cell ~~A~~ C and activates cell ~~B~~C.
18	UE			Cell ~~B~~ C is preferred by the UE.
19	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
20	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for PS services

Step	Direction		Message	Comments
	UE	SS		
21	UE			No response from the UE to the request. This is checked for 10 seconds.
22	UE			If possible (see PICS) USIM removal is performed. Otherwise if possible (see PICS) switch off is performed. Otherwise the power is removed.
~~19~~	~~UE~~			~~Step 20 is only performed for non-auto attach UE.~~
~~20~~	~~UE~~		~~Registration on CS~~	~~A location updating procedure is initiated.~~ ~~See TS34.108~~
~~21~~	~~UE~~			~~Location updating type = normal.~~ ~~The SS allocates TMSI-1.~~ ~~UE initiates an attach automatically (see PICS), by MMI or AT commands.~~
~~22~~			~~PAGING TYPE1~~	~~Mobile identity = TMSI-1~~ ~~Paging order is for CS services.~~
~~23~~			~~RRC CONNECTION REQUEST~~	
~~24~~			~~RRC CONNECTION SETUP~~	
~~25~~			~~RRC CONNECTION SETUP COMPLETE~~	
~~26~~			~~PAGING RESPONSE~~	~~Mobile identity = TMSI-1~~
~~27~~			~~RRC CONNECTION RELEASE~~	~~After sending of this message, the SS waits for disconnection of the CS signaling link.~~
~~28~~			~~RRC CONNECTION RELEASE COMPLETE~~	
~~29~~	~~<-~~		~~PAGING TYPE1~~	~~Mobile identity = IMSI~~ ~~Paging order is forPS services.~~
~~30~~	~~UE~~			~~The UE shall not initiate an RRC connection.~~ ~~This is checked during 3 seconds.~~
~~31~~23	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
24	UE			Step 25 is only performed for non-auto attach UE.
25	UE		Registration on CS	A location updating procedure is initiated. See TS34.108
26	UE			Parameter Mobile identity is IMSI. UE initiates an attach automatically (see PICS), by MMI or AT commands.
~~32~~27	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'GPRS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available
~~33~~28	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1~~2~~ Routing area identity = RAI-2
~~34~~29	->		ATTACH COMPLETE	
~~35~~30	<-		PAGING TYPE1	Mobile identity = TMSI-1~~2~~ Paging order is for CS services.
~~36~~31	->		RRC CONNECTION REQUEST	
~~37~~32	<-		RRC CONNECTION SETUP	
~~38~~33	->		RRC CONNECTION SETUP COMPLETE	
~~39~~34	->		PAGING RESPONSE	Mobile identity = TMSI-2
~~40~~35	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
~~41~~36	->		RRC CONNECTION RELEASE COMPLETE	
~~42~~37	UE			The UE is switched off or power is removed (see ICS).
~~43~~38	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.4.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~- check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.~~

~~- set the PS update status to GU3 ROAMING NOT ALLOWED.~~

~~- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.~~

~~- consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.~~

At step7, 9 and 16, when the UE receives the paging message for CS domain, UE shall,

- not respond to the paging message for CS domain.

At step11 and 21, when the UE receives the paging message for PS domain, UE shall,

- not respond to the paging message for PS domain.

At step27, when the USIM is replaced, UE shall:

- perform the combined PS attach procedure.

At step34, when the UE receives the paging message for CS domain, UE shall,

- respond to the paging message for CS domain by sending the RAGING RESPONSE message.

~~- perform an MM IMSI attach procedure, if the UE is PS class A.~~

12.2.2.5 Combined PS attach / rejected / PS services and non-PS services not allowed

12.2.2.5.1 Definition

12.2.2.5.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services and non-PS services not allowed', the User Equipment shall consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services and non-PS services not allowed', the User Equipment shall delete the stored TMSI, LAI, CSKN, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.5.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure of the UE with the cause 'PS services and non-PS services not allowed'.

12.2.2.5.4 Method of test

Initial condition

System Simulator:

- Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
  Both cells are operating in network operation mode I.

User Equipment:

- The UE has a valid TMSI-1, P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

- Support of PS service Yes/No
  UE operation mode A Yes/No
  Switch off on button Yes/No
  Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PS services and non-PS services not allowed'. The SS checks that the UE does not perform PS attach in the same or another PLMN. CS services are not possible as the USIM is blocked for CS services. PS services are not possible as the USIM is blocked for PS services.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'GPRS attach while IMSI attached' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause 'PS services and non-PS services not allowed'
6	UE			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds).
7	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS Paging.
10	~~->~~UE			No response from the UE to the request. This is checked for 10 seconds
11	~~UE~~SS			Cell A is deactivated and cell B is activated.
12			(void)	
13	UE			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds).
14	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
15	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
16	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
17	UE			No response from the UE to the request. This is checked for 10seconds.
18	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
19	UE			The UE is powered up or switched.
20	UE		Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE. Parameter mobile identity is IMSI.
21	UE			UE initiates an attach automatically (see PICS), by MMI or AT commands.
22	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'GPRS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available
23	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
24	->		ATTACH COMPLETE	
25	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
26	->		RRC CONNECTION REQUEST	
27	<-		RRC CONNECTION SETUP	

Step	Direction		Message	Comments
	UE	SS		
28	->		RRC CONNECTION SETUP COMPLETE	
29	->		PAGING RESPONSE	Mobile identity = TMSI-1
30	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31	->		RRC CONNECTION RELEASE COMPLETE	
32	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services.
33	->		RRC CONNECTION REQUEST	
34	<-		RRC CONNECTION SETUP	
35	->		RRC CONNECTION SETUP COMPLETE	
36	->		SERVICE REQUEST	Service type = "paging response"
37	<-		RRC CONNECTION RELEASE	
38	->		RRC CONNECTION RELEASE COMPLETE	
39	UE			The UE is switched off or power is removed (see ICS).
40	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~- check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.~~

~~set the PS update status to GU3 ROAMING NOT ALLOWED.~~

~~delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.~~

~~consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.~~At step8 and 14, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step10 and 17, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step22, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure.

At step29, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step36, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.2.2.6 Combined PS attach / rejected / PS services not allowed

12.2.2.6.1 Definition

12.2.2.6.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

3) A PS class AUE shall perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.6.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS services not allowed'.

12.2.2.6.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode I.

ATT flag set to 1

User Equipment:

The UE has a valid TMSI, P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal attach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach. PS services are not possible. An UE operation mode A UE shall perform an MM IMSI attach.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on ~~and initiates an attach (see ICS)~~.
2a	UE		Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE. Parameter mobile identity is TMSI-1.
2b	UE			UE initiates an attach automatically (see PICS), via MMI or AT commands.
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'GPRS attach while IMSI attached' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4		<-	ATTACH REJECT	GMM cause 'PS services not allowed'
5	UE			An automatic MM IMSI attach procedure is initiated.
6	UE		Registration on CS	See TS 34.108 Location updating type = IMSI attach. The SS allocates TMSI-2.
7		<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
8		->	RRC CONNECTION REQUEST	
9		<-	RRC CONNECTION SETUP	
10		->	RRC CONNECTION SETUP COMPLETE	
11		->	PAGING RESPONSE	Mobile identity = TMSI-2
12		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signaling link.
13		->	RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell B.
14		SS		The SS deactivates cell A and activates cell B.
15	UE			Cell B is preferred by the UE.
16	UE			A location updating procedure is initiated.
17	UE		Registration on CS	See TS 34.108 Location updating type = normal. The SS allocates TMSI-1.
18		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
19		->	RRC CONNECTION REQUEST	
20		<-	RRC CONNECTION SETUP	
21		->	RRC CONNECTION SETUP COMPLETE	
22		->	PAGING RESPONSE	Mobile identity = TMSI-1
23		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
24		->	RRC CONNECTION RELEASE COMPLETE	
25		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services
26	UE			No response from the UE to the request. This is checked for 10seconds.
27	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
27a	UE			If switch off is performed then UE performs IMSI detach procedure.
28	UE			The UE is powered up or switched ~~on and initiates an attach (see ICS)~~.

Step	Direction		Message	Comments
	UE	SS		
28a	UE		Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE. Parameter mobile identity is TMSI-1.
28b	UE			UE initiates an attach automatically (see PICS), via MMI or AT commands.
29	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'GPRS attach while IMSI attached' Mobile identity = IMSI ~~TMSI status = no valid TMSI available~~
30	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
31	->		ATTACH COMPLETE	
32	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
33	->		RRC CONNECTION REQUEST	
34	<-		RRC CONNECTION SETUP	
35	->		RRC CONNECTION SETUP COMPLETE	
36	->		PAGING RESPONSE	Mobile identity = TMSI-2
37	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
38	->		RRC CONNECTION RELEASE COMPLETE	
39	UE			The UE is switched off or power is removed (see ICS).
40	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.6.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.~~

~~set the PS update status to GU3 ROAMING NOT ALLOWED.~~

~~delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.~~

~~consider USIM invalid for PS services until power is switched off or USIM is removed.~~At step6, if the UE is PS class A, UE shall:

- ~~-~~perform ~~an~~ the MM IMSI attach procedure~~, if the UE is PS class A~~.

At step11, 22 and 36, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step26, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step29, UE shall:

- perform the PS attach procedure.

12.2.2.7a Combined PS attach / rejected / location area not allowed

12.2.2.7a.1 Definition

12.2.2.7a.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   2.1 perform combined PS attach when a new location area is entered.

   2.2 delete the list of forbidden LAs when power is switched off.

Reference

3GPP TS 24.008 clauses 4.7.3.2.

12.2.2.7a.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.2.2.7a.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3).
All cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined PS attach with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH REJECT	GMM cause 'Location Area not allowed'
6	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
7		<-	PAGING TYPE1	Mobile identity = TMSI Paging order is for CS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging oder is for PS services.
10		->		No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell B.
11		SS		The SS deactivates cell A and activates cell B.
12	UE			Cell B is preferred by the UE.
13	UE			No ATTACH REQUEST or LOCATION UPDATING REQ is sent to SS (SS waits ~~30~~ 60 seconds)
~~14~~	~~UE~~			~~No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).~~
15		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
16	UE			No response from the UE to the request. This is checked for 10seconds.
17	UE			The UE initiates an attach by MMI or AT command.
18				No attach is performed by the UE. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
19		SS		The SS deactivates cell B and activates cell C.
20	UE			Cell C is preferred by the UE.
21		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
22		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-3
23		->	ATTACH COMPLETE	
24		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
25		->	RRC CONNECTION REQUEST	
26		<-	RRC CONNECTION SETUP	
27		->	RRC CONNECTION SETUP COMPLETE	
28		->	PAGING RESPONSE	Mobile identity = TMSI-1

Step	Direction		Message	Comments
	UE	SS		
29		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
30		->	RRC CONNECTION RELEASE COMPLETE	
31		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
32		->	RRC CONNECTION REQUEST	
33		<-	RRC CONNECTION SETUP	
34		->	RRC CONNECTION SETUP COMPLETE	
35		->	SERVICE REQUEST	Service type = "paging response"
36		<-	RRC CONNECTION RELEASE	
37		->	RRC CONNECTION RELEASE COMPLETE	
38	UE			The UE is switched off or power is removed (see ICS).
39		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
				The following messages are sent and shall be received on cell B.
40	UE			The SS deactivates cell C and activates cell B. Cell B is preferred by the UE.
41	UE			The UE is powered up or switched on and initiates an attach (see ICS).
42				Step 43 is only performed for non-auto attach UE.
43	UE		Registration on CS	See TS 34.108
44	UE			UE initiates an attach automatically (see PICS), by MMI or AT commands.
45		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
46		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
47		->	ATTACH COMPLETE	
48		<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
49		->	RRC CONNECTION REQUEST	
50		<-	RRC CONNECTION SETUP	
51		->	RRC CONNECTION SETUP COMPLETE	
52		->	PAGING RESPONSE	Mobile identity = TMSI-2
53		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
54		->	RRC CONNECTION RELEASE COMPLETE	
55		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
56		->	RRC CONNECTION REQUEST	
57		<-	RRC CONNECTION SETUP	
58		->	RRC CONNECTION SETUP COMPLETE	
59		->	SERVICE REQUEST	service type = "paging response"
60		<-	RRC CONNECTION RELEASE	
61		->	RRC CONNECTION RELEASE COMPLETE	
62	UE			The UE is switched off or power is removed (see ICS).

Step	Direction		Message	Comments
	UE	SS		
63	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.7a.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~- perform the following action depending on UE location.~~

~~When in the same location area, UE shall~~

~~- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.~~

~~- delete any stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.~~

~~- store the LAI or the PLMN identity in the appropriate forbidden list("forbidden location areas for regional provision of service").~~

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Location Area not allowed', UE shall:

- not initiate MM location updating procedure.

At step8, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step10 and 16, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step13 and 18, when the UE is in the same location area, UE shall:

- not perform PS attach procedure.

At step21, ~~When~~ when the UE enters a new location area ~~is entered~~, UE shall

- perform the combined PS attach ~~when UE entered a new location area~~ procedure.

~~- delete the list of forbidden LAs when power is switched off.~~

At step28 and 52, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35 and 59, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step45, when the UE is powered up or switched on, UE shall:

- perform the combined PS attach procedure.

12.2.2.7b Combined PS attach / rejected / No Suitable Cells In Location Area

12.2.2.7b.1 Definition

12.2.2.7b.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for roaming'.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   2.1 search for a suitable cell in a different location area on the same PLMN.

Reference

3GPP TS 24.008 clauses 4.7.3.2.

12.2.2.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure with the cause 'No Suitable Cells In Location Area'.

12.2.2.7b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

User Equipment:

The UE has valid TMSI, P-TMSI, P-TMSI signature and RAI

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform combined PS attach procedure in that cell

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
	SS			The SS activates three cells simultaneously. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	GMM cause = 'No Suitable Cells In Location Area'
5	SS			The SS initiates the RRC connection release. The following message are sent and shall be received on cell B.
6	UE			The UE initiates an attach automatically, by MMI or by AT command.
7	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
8	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-•
9	->		ATTACH COMPLETE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.2.7b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected sequence ~~when the UE is powered up or switched on~~.

~~delete any stored LAI, CKSN, TMSI, RAI, PS CKSN, P TMSI and P TMSI signature.~~

~~store the LAI or the PLMN identity in the appropriate forbidden list("forbidden location areas for roaming ").~~

~~search for a suitable cell in a different location area on the same PLMN.~~At step7, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- initiate the combined PS attach procedure.

12.2.2.8 Combined PS attach / abnormal cases / attempt counter check / miscellaneous reject causes

12.2.2.8.1 Definition

12.2.2.8.2 Conformance requirement

1) When a combined PS attach procedure is rejected with the attempt counter less than five, the User Equipment shall repeat the combined PS attach procedure after T3311 timeout.

2) When a combined PS attach procedure is rejected with the attempt counter five, the User Equipment shall delete the stored TMSI, LAI, CKSN, P-TMSI, P-TMSI signature, PS CKSN and RAI and start T3302.

3) When the T3302 expire, a new combined PS attach procedure shall be initiated.

GMM cause codes that can be selected are:
'IMSI unknown in HLR'
~~'IMEI not accepted'~~
'UE identity cannot be derived by the network'
'Network failure'
'Congestion'
'retry upon entry into a new cell'
'Semantically incorrect message'
'Invalid mandatory information'
'Message type non-existent or not implemented'
'Message type not compatible with the protocol state'
'Information element non-existent or not implemented'
'Conditional IE error'
'Message not compatible with the protocol state'
'Protocol error, unspecified'

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.8.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.2.2.8.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No Automatic PS attach procedure at switch on or power on Yes/No

Switch off on button Yes/No

Test procedure

The UE initiates a combined PS attach procedure (attempt counter zero).

The SS rejects the attach with an arbitrarily chosen~~random~~ cause code.

The UE initiates a new combined PS attach procedure (attempt counter one) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen~~random~~ cause code.

The UE initiates a new combined PS attach procedure (attempt counter two) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen~~random~~ cause code.

The UE initiates a new combined PS attach procedure (attempt counter three) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen~~random~~ cause code.

The UE initiates a new combined PS attach procedure (attempt counter four) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen~~random~~ cause code.

~~The UE initiates a new combined PS attach procedure with attempt counter five (after T3311 expires).~~

~~The SS rejects the attach with a random cause code.~~ The UE shall not perform a new successful attach procedure after 15 seconds.

The UE initiates a combined PS attach procedure with attempt counter zero after T3302 expires without P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 10 minutes.

T3311; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	Arbitrary chosen GMM cause T3302 with value 10 min.
5	SS			The SS verifies that the time between the attach reject and attach request~~s~~ is T3311
6	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
7	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
8	SS			The SS verifies that the time between the attach reject and attach request~~s~~ is T3311
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
10	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
11	SS			The SS verifies that the time between the attach reject and attach request~~s~~ is T3311
12	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
13	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
14	SS			The SS verifies that the time between the attach reject and attach request~~s~~ is T3311
15	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
16	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
17	UE		Registration on CS	~~No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).~~ See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
~~18~~	~~<-~~		~~PAGING TYPE1~~	~~Mobile identity = TMSI-1 Paging order is for CS services.~~
~~19~~	~~UE~~			~~The UE shall not initiate an RRC connection. This is checked during 3 seconds.~~
20	<-		PAGING TYPE1	Paging order is for PS services. Mobile identity = P-TMSI-1
21	UE			No response from the UE to the request. This is checked for 10seconds.
22	SS			The SS verifies that the UE does not attempt to attach for T3302 .
23	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' 'GPRS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
24		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity P-TMSI-1 P-TMSI signature Mobile identity = TMSI-1 Routing area identity = RAI-1
25		->	ATTACH COMPLETE	
26		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services..
27		->	RRC CONNECTION REQUEST	
28		<-	RRC CONNECTION SETUP	
29		->	RRC CONNECTION SETUP COMPLETE	
30		->	PAGING RESPONSE	Mobile identity = TMSI-1
31		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
32		->	RRC CONNECTION RELEASE COMPLETE	
33		<-	PAGING TYPE1	Mobile identity = P-TMSI-1
33a		->	RRC CONNECTION REQUEST	
33b		<-	RRC CONNECTION SETUP	
33c		->	RRC CONNECTION SETUP COMPLETE	
34		->	SERVICE REQUEST	Service type = "paging response"
34a		<-	RRC CONNECTION RELEASE	
34b		->	RRC CONNECTION RELEASE COMPLETE	
35	UE			The UE is switched off or power is removed (see ICS).
36		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.8.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

UE shall ~~–~~ perform the following actions depending on the conditions described below.

Case1) A combined PS attach procedure is rejected with the attempt counter less than five

At step6, 9, 12 and 15, when the timer T3311 timeout has occurred, UE shall:

- repeat the combine PS attach procedure ~~after the timer T3311 timeout~~.

Case2) A combined PS attach procedure is rejected with the attempt counter five

~~UE shall:~~

At step21, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

~~delete the stored TMSI, LAI, CKSN, P-TMSI, P-TMSI signature, PS CKSN and RAI and~~

~~start the timer T3302.~~

Case3) The T3302 expires

At step23, UE shall:

- ~~-~~re-initiate ~~a~~ the new combined PS attach procedure.

At step30, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step34, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.2.2.9 Combined PS attach / abnormal cases / PS detach procedure collision

12.2.2.9.1 Definition

12.2.2.9.2 Conformance requirement

1) When a DETACH REQUEST message is received by the UE (any cause except re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the UE shall terminate the combined PS attach procedure and continue with the combined PS detach procedure.

2) When a DETACH REQUEST message is received by the UE (cause re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the UE shall ignore the combined PS detach procedure and continue with the combined PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2.

12.2.2.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.2.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has valid TMSI, P-TMSI, P-TMSI signature and RAI. UE is Idle Updated.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a combined PS attach procedure. The SS does not answer the combined PS attach procedure, but initiates a combined PS detach procedure (any cause except re-attach). The UE shall terminate the combined PS attach procedure and continue with the combined PS detach procedure.

The UE initiates a combined PS attach procedure. The SS does not answer the combined PS attach procedure, but initiates a combined PS detach procedure (cause re-attach). The UE shall ignore the combined PS detach procedure and continue with the combined PS attach. CS services are also possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	<-		DETACH REQUEST	Detach type = 're-attach not required'
6	->		DETACH ACCEPT	
7			(void)	
8			(void)	
9	UE			The UE is attached by MMI or AT command
10	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
12	<-		DETACH REQUEST	Detach type = 're-attach required'
13	UE			The UE ignores the DETACH REQUEST message and continue with the attach procedure
14	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-1
15	->		ATTACH COMPLETE	
16	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
17	->		RRC CONNECTION REQUEST	
18	<-		RRC CONNECTION SETUP	
19	->		RRC CONNECTION SETUP COMPLETE	
20	->		PAGING RESPONSE	Mobile identity = TMSI-2
21	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
22	->		RRC CONNECTION RELEASE COMPLETE	
23	<-		PAGING TYPE1	Paging order is for PS services. Mobile identity = P-TMSI-2
23a	->		RRC CONNECTION REQUEST	
23b	<-		RRC CONNECTION SETUP	
23c	->		RRC CONNECTION SETUP COMPLETE	
24	->		SERVICE REQUEST	Service type = "paging response"
24a	<-		RRC CONNECTION RELEASE	
24b	->		RRC CONNECTION RELEASE COMPLETE	
25	UE			The UE is switched off or power is removed (see ICS).
26	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

UE shall ~~–~~perform the following actions depending on the Detach type described below.

Case1) Detach type is not re-attach

At step6, UE shall:

- respond to DETACH REQUEST message by sending DETACH ACCEPT message.

~~- terminate the combined PS attach procedure.~~

~~- continue with the combined PS detach procedure.~~

Case2) Detach type is re-attach

At step13, UE shall:

- ~~-~~ignore the ~~combined~~ PS detach procedure.

~~- continue with the combined PS attach procedure~~At step15, UE shall:

- send the ATTACH COMPLETE message.

At step20, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step24, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.~~-~~

12.3 PS detach procedure

12.3.1 UE initiated PS detach procedure

12.3.1.1 PS detach / power off / accepted

12.3.1.1.1 Definition

12.3.1.1.2 Conformance requirement

The UE detaches the IMSI for PS services if the UE is switched off.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.1.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The UE sends a DETACH REQUEST message to the SS.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 8.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off (see ICS).
7	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
8	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 2 to step 7.

Specific message contents

None.

12.3.1.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step7, when the UE is switched off, ~~After the PS attach procedure is completed,~~ UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, PS detach'.

12.3.1.2 PS detach / accepted

12.3.1.2.1 Definition

12.3.1.2.2 Conformance requirement

The UE detaches the IMSI for PS services if the UE is ordered to do so with MMI or AT commands.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.2.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure ~~and activates a PDP context~~.

The UE sends a DETACH REQUEST message to the SS.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step ~~11~~12.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
5			(void)	
6	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11			(void)	
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 10.

Specific message contents

None.

12.3.1.2.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step7, ~~After the PS attach procedure is completed,~~ UE shall:

- sends the DETACH REQUEST message(without power off) to SS.

~~start timer T3321.~~

~~When UE receives the DETACH ACCEPT message from SS before the timer T3321 is not expired, UE shall:~~

~~stop timer T3321.~~At step10, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

12.3.1.3 PS detach / abnormal cases / attempt counter check / procedure timeout

12.3.1.3.1 Definition

12.3.1.3.2 Conformance requirement

1) When a T3321 timeout has occurred during a PS detach procedure with the attempt counter less than five, the User Equipment shall repeat the PS detach procedure.

2) When a T3321 timeout has occurred during a PS detach procedure with the attempt counter five, the User Equipment shall not repeat the procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.3.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.3.1.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The UE initiates a PS detach procedure (attempt counter zero). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter one) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter two) after T3321expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter three) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter four) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure with attempt counter five (after T3321expires). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

At T3321 timeout in the UE, the UE then deletes the logical link since the retransmissions have been repeated four times.

The UE performs a new PS attach procedure.

T3321; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 22.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
5	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
6	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
7	SS			No response is given from the SS.
8	SS			The SS verifies that the time between the detach requests is 15 seconds
9	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
10	SS			No response is given from the SS.
11	SS			The SS verifies that the time between the detach requests is 15 seconds
12	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
13	SS			No response is given from the SS.
14	SS			The SS verifies that the time between the detach requests is 15 seconds
15	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
16	SS			No response is given from the SS.
17	SS			The SS verifies that the time between the detach requests is 15 seconds
18	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
19	SS			No response is given from the SS within 40 seconds and SS verifies that the UE will not send a DETACH REQUEST again.
20	UE			Initialte a PS attach
21	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
22	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
23				UE is switched off or power is removed (see ICS)
24	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
25	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 24.

Specific message contents

None.

12.3.1.3.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attaché procedure with the information elements specified in the above Expected Sequence ~~when the UE is powered up or switched on.~~

~~After the PS attach procedure is completed, UE shall:~~

- ~~initiate a PS detach procedure(without power off).~~
- ~~start timer T3321.~~

At step9, 12, 15 and 18, ~~When~~ when a ~~T3221~~ T3321expires with the attempt counter less than five, UE shall:

- initiate ~~a~~ the new PS detach procedure.
- ~~increment the attempt counter.~~
- ~~re-start timer T3321.~~

At step19, ~~When~~ when ~~a T3221 expires with~~ the attempt counter is greater than or equal to five, UE shall:

- not repeat the PS detach procedure.

At step20, UE shall:

- initiate the PS attaché procedure.

12.3.1.4 PS detach / abnormal cases / GMM common procedure collision

12.3.1.4.1 Definition

12.3.1.4.2 Conformance requirement

When any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the UE while waiting for a DETACH ACCEPT message with detach cause different from "power off", the UE shall ignore the GMM common message.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.4.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No (only if mode C not supported)
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

Test procedure

The UE performs a PS attach.

The UE initiates a PS detach. The SS initiates a P-TMSI REALLOCATION COMMAND message, a GMM STATUS message and a GMM INFORMATION message. The UE shall ignore the GMM common messages and continue with the PS detach procedure.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
8	SS			The SS sends a P-TMSI REALLOCATION COMMAND message
9	<-		P-TMSI REALLOCATION COMMAND	
10	UE			The UE ignores the message.
11	SS			The SS sends a GMM STATUS message
12	<-		GMM STATUS	
13	UE			The UE ignores the message.
14	SS			The SS sends a GMM INFORMATION message
15	<-		GMM INFORMATION	
16	UE			The UE ignores the message.
17	<-		DETACH ACCEPT	The SS responds to the DETACH REQUEST
18	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
19	UE			No response from the UE to the request. This is checked for 10 seconds.

Specific message contents

None.

12.3.1.4.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attaché procedure with the information elements specified in the above Expected Sequence ~~when the UE is powered up or switched on~~.

~~After the PS attach procedure is completed, UE shall:~~

- ~~initiate a PS detach procedure(without power off).~~

At step10, 13, 16 and 19, ~~When~~ when any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the UE while waiting for a DETACH ACCEPT message with detach cause different from "power off, UE shall: .

- ignore any of the GMM common messages.

12.3.1.5 PS detach / power off / accepted

12.3.1.5.1 Definition

12.3.1.5.2 Conformance requirement

The UE detach the IMSI for PS and non-PS services.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.5.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE sends a DETACH REQUEST message to the SS. The UE then deletes the logical link.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off (see ICS).
7	->		DETACH REQUEST	Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.1.5.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step7, when the UE is switched off~~After the PS attach procedure is completed~~, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, combined PS / IMSI detach' ~~after the PS attach procedure is completed~~.

12.3.1.6 PS detach / accepted / PS/IMSI detach

12.3.1.6.1 Definition

12.3.1.6.2 Conformance requirement

The UE detach the IMSI for PS and non-PS services.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.6.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.6.4 Method of test

Initial condition

System Simulator:

- One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

- Support of PS service Yes/No
  UE operation mode A Yes/No
  Switch off on button Yes/No
  Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE sends a DETACH REQUEST message to the SS. When the UE receives the DETACH ACCEPT, the UE then deletes the logical link.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A(see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
12	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

Specific message contents

None.

12.3.1.6.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After the combined PS attach procedure is completed, UE shall:~~

- ~~sends the DETACH REQUEST message(UE not switched off) to SS.~~

~~- shall start timer T3321.~~

~~When the UE receive the DETACH ACCEPT message from SS before the timer T3321 is not expired, the UE shall:~~

~~- stop timer T3321.~~

At step10, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step12, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

12.3.1.7 PS detach / accepted / IMSI detach

12.3.1.7.1 Definition

12.3.1.7.2 Conformance requirement

The UE shall detach for CS services.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.7.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.7.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

- The UE has a valid IMSI.

Related ICS/IXIT statements

- Support of PS service Yes/No
  UE operation mode A Yes/No
  Switch off on button Yes/No
  Automatic PS attach procedure at switch on or power on Yes/No
  MMI controlled attach / detach procedures for non-PS services Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE performs an PS detach (for non-PS services).

CS services are not possible.

The UE attach for non-PS services by a routing area update procedure and CS services are again possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach for non-PS services (without power off) (see ICS).
7	->		DETACH REQUEST	Detach type = 'normal detach, IMSI detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
9a	->		RRC CONNECTION REQUEST	
9b	<-		RRC CONNECTION SETUP	
9c	->		RRC CONNECTION SETUP COMPLETE	
10	->		SERVICE REQUEST	service type = "paging response"
10a	<-		RRC CONNECTION RELEASE	
10b	->		RRC CONNECTION RELEASE COMPLETE	
11	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services. Paging order is for RRC connection.
12	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
13	UE			The UE initiates an attach for non-PS services by a RA update procedure (see ICS).
14	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating" P-TMSI-1 signature Routing area identity = RAI-1
15	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated" Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
16	->		ROUTING AREA UPDATE COMPLETE	
17	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
18	->		RRC CONNECTION REQUEST	
19	<-		RRC CONNECTION SETUP	
20	->		RRC CONNECTION SETUP COMPLETE	
21	->		PAGING RESPONSE	Mobile identity = TMSI-1
22	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
23	->		RRC CONNECTION RELEASE COMPLETE	
24	UE			The UE is switched off or power is removed (see ICS).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.1.7.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After the combined PS attach procedure is completed, UE shall:~~

~~- sends the DETACH REQUEST message(UE not switched off) to SS.~~

~~- start timer T3321.~~

~~When the UE receives the DETACH ACCEPT message from SS before the timer T3321 is not expired, the UE shall:~~

~~- stop timer T3321.~~At step10, after the detach procedure (Detach type = 'normal detach, IMSI detach') is completed, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step12, after the detach procedure (Detach type = 'normal detach, IMSI detach') is completed, UE shall:

- not respond to the paging message for CS.

At step21, after the routing area updating procedure (Update type = 'Combined RA/LA updating') is completed, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

12.3.1.8 PS detach / abnormal cases / change of cell into new routing area

12.3.1.8.1 Definition

12.3.1.8.2 Conformance requirement

When a change of cell into a new routing area is performed before DETACH ACCEPT message is received by the UE, the UE shall abort the PS detach procedure and re-initiate it after the routing area update procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.8.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE initiates a PS detach procedure. The DETACH ACCEPT message is delayed from the SS.

The UE performs a cell update into a new routing area.

The UE shall re-initiate a PS detach procedure when the routing area update procedure is finished.

The UE deletes the logical link.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
8	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
9		SS		No response to the DETACH REQUEST message is given by the SS
				The following messages are sent and shall be received on cell B.
10		SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the UE.
11	UE			The UE performs a RA update in the new cell.
12	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' ~~Mobile identity = P-TMSI-1~~ P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE omitted
13	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
14	->		ROUTING AREA UPDATE COMPLETE	
15	->		DETACH REQUEST	The detach is automatically re-attempted. Detach type = 'normal detach, combined PS / IMSI detach'
16	~~->~~<-		DETACH ACCEPT	

Specific message contents

None.

12.3.1.8.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After the combined PS attach procedure is completed, UE shall:~~

~~- initiate a PS detach.~~

At step12, ~~When~~ when a change of cell into a new routing area is performed before DETACH ACCEPT message is received by the UE, UE shall:

- ~~-~~abort a PS detach procedure.
- perform routing area updating procedure.

At step15, when the UE completes a routing area updating procedure, UE shall:

- re-initiate ~~a~~ the PS detach procedure ~~after successfully performing a routing area updating procedure~~.

12.3.1.9 PS detach / abnormal cases / PS detach procedure collision

12.3.1.9.1 Definition

12.3.1.9.2 Conformance requirement

When a DETACH REQUEST is received by the UE while waiting for a DETACH ACCEPT message, the UE shall answer the network initiated PS detach procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1.

12.3.1.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE initiates a PS detach. The SS does not answer the detach procedure, but initiates a detach procedure (cause re-attach not required). The UE shall continue with the network initiated detach procedure.

The UE deletes the logical link.

PS and CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A(see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
8	<-		DETACH REQUEST	Detach type = 're-attach not required'
9	->		DETACH ACCEPT	The UE answers the network initiated detach.
10	<-		DETACH ACCEPT	The SS answers the UE initiated detach.
11	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
12	UE			No response from the UE to the request. This is checked for 10 seconds.
13	<-		PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services.
14	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

Specific message contents

None.

12.3.1.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on.~~

~~After the combined PS attach procedure is completed, UE shall:~~

~~- initiate a PS detach procedure.~~

At step9, ~~When~~ when the UE receives DETACH REQUEST message from SS before UE initiated PS detach procedure has been completed, UE shall:

- ~~-~~send the DETACH ACCEPT message to SS.

At step12, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step14, ~~-~~when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

12.3.2 Network initiated PS detach procedure

12.3.2.1 PS detach / re-attach not required / accepted

12.3.2.1.1 Definition

12.3.2.1.2 Conformance requirement

The UE detach the IMSI for PS services.

Reference

3GPP TS 24.008 clause 4.7.4.2.

12.3.2.1.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.2.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The SS sends a DETACH REQUEST message to the UE. The UE then deletes the logical link.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS is set in network operation mode II.
2	UE			The UE is set in UE operation mode A or C (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6		->	ATTACH COMPLETE	
7	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
8		<-	DETACH REQUEST	Detach type = 're-attach not required'
9		->	DETACH ACCEPT	
10		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE1 (used for NW-mode II).
11	UE			No response from the UE to the request. This is checked for 10 seconds.

Specific message contents

None.

12.3.2.1.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step9, ~~When~~ when the UE receives the DETACH REQUEST message from SS and the detach type IE indicates 're-attach not required', the UE shall:

~~- deactivate the PDP context and the logical link(s).~~

- ~~-~~send DETACH ACCEPT message to SS.

At step11, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

12.3.2.2 PS detach / rejected / IMSI invalid / PS services not allowed

12.3.2.2.1 Definition

12.3.2.2.2 Conformance requirement

1) If the network performs a PS detach procedure with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network performs a PS detach procedure with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.4.2.

12.3.2.2.3 Test purpose

To test the behaviour of the UE if the network order a PS detach procedure with the cause 'PS services not allowed' (no valid PS-subscription for the IMSI).

12.3.2.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS performs a detach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach in another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 19.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6		->	ATTACH COMPLETE	
7		<-	DETACH REQUEST	Detach type = 're-attach not required' Cause = 'PS services not allowed'
8		->	DETACH ACCEPT	
				The following messages are sent and shall be received on cell B.
9		SS		The SS deactivates cell A and activates cell B.
10	UE			Cell B is preferred by the UE. Step 11 is only performed for UE Operation Mode A.
11	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
12				The UE initiates an attach automatically (see PICS), by MMI or AT commands.
13	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
14	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
15	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
16		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
17		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
18		->	ATTACH COMPLETE	
19	UE			The UE is switched off or power is removed (see ICS).
20		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
21				The SS deactivates cell B and activates cell A.
22	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 18.

Specific message contents

None.

12.3.2.2.5 Test requirements

At step4 and 15, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step8, when ~~After the completion of the PS attach procedure, and when~~ the UE receives the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'PS services not allowed') from SS, UE shall:

~~- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.~~

- ~~consider the USIM as invalid for PS service until power is switched off or USIM is removed.~~send DETACH ACCEPT message.

At step13, UE shall:

- not perform PS attach procedure.

12.3.2.3 PS detach / IMSI detach / accepted

12.3.2.3.1 Definition

12.3.2.3.2 Conformance requirement

The UE detach the IMSI for PS services.

Reference

3GPP TS 24.008 clause 4.7.4.2.

12.3.2.3.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.2.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The SS sends a DETACH REQUEST message to the UE. The UE then performs an IMSI detach (detach for non-PS services).

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

The UE attach for non-PS services by a routing area update procedure. Both PS and CS services are possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6		SS		The SS initiates a detach for non-PS services.
7	<-		DETACH REQUEST	Detach type = 'IMSI detach'
8	->		DETACH ACCEPT	
9	UE			The UE initiates an attach for non-PS services (see ICS).
10	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
11	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updating' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
12	->		ROUTING AREA UPDATE COMPLETE	
13	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
14	->		RRC CONNECTION REQUEST	
15	<-		RRC CONNECTION SETUP	
16	->		RRC CONNECTION SETUP COMPLETE	
17	->		PAGING RESPONSE	Mobile identity = TMSI-1
18	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
19	->		RRC CONNECTION RELEASE COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.3.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After the completion of the PS attach procedure, UE shall:~~

- ~~receive DETACH REQUEST message(Detach type = 'IMSI detach') from SS.~~

~~not deactivate the PDP context.~~At step8, when the UE receives the DETACH REQUEST message with Detach type = 'IMSI detach', UE shall;

- ~~and~~ send the DETACH ACCEPT message to SS.

At step10, after the completion of the detach procedure, UE shall;

- perform combined routing area updating procedure.

At step17, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

12.3.2.4 PS detach / re-attach requested / accepted

12.3.2.4.1 Definition

12.3.2.4.2 Conformance requirement

The UE shall deactivate the logical link and re-activate it.

Reference

3GPP TS 24.008 clause 4.7.4.2.

12.3.2.4.3 Test purpose

To test the behaviour of the UE for the detach procedure in case automatic re-attach.

12.3.2.4.4 Method of test

Initial condition

System Simulator:

One cell in operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The SS sends a DETACH REQUEST message to the UE with cause re-attach. The UE then detaches for PS services. The UE automatically performs a new combined PS attach procedure (for PS and non-PS services) and PS and CS services are possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = TMSI-1 Routing area identity = RAI-1 No new P-TMSI and P-TMSI signature assigned
5	->		ATTACH COMPLETE	
6	SS			The SS initiates a detach with re-attach.
7	<-		DETACH REQUEST	Detach type = 're-attach required'
8	->		DETACH ACCEPT	
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 ~~P-TMSI-1 signature~~ ~~Mobile identity = TMSI-1~~ Routing area identity = RAI-1
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = TMSI-1 Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
11	->		ATTACH COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
12a	->		RRC CONNECTION REQUEST	
12b	<-		RRC CONNECTION SETUP	
12c	->		RRC CONNECTION SETUP COMPLETE	
13	->		SERVICE REQUEST	service type = "paging response"
13a	<-		RRC CONNECTION RELEASE	
13b	->		RRC CONNECTION RELEASE COMPLETE	
14	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
15	->		RRC CONNECTION REQUEST	
16	<-		RRC CONNECTION SETUP	
17	->		RRC CONNECTION SETUP COMPLETE	
18	->		PAGING RESPONSE	Mobile identity = TMSI-1
19	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
20	->		RRC CONNECTION RELEASE COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.4.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After the completion of the combined PS attach procedure, UE shall:~~

~~- deactivate the PDP context and the logical link(s).~~

At step8, when the UE receives DETACH REQUEST message with Detach type = 're-attach required', UE shall;

- send DETACH ACCEPT message to SS.

At step9, ~~After~~ after UE completed PS detach procedure with Detach type = 're-attach required', UE shall:

- initiate ~~a~~ the combined PS attach procedure.

At step13, when the UE receives the paging message for PS domain, UE shall;

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step18, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

12.3.2.5 PS detach / rejected / location area not allowed

12.3.2.5.1 Definition

12.3.2.5.2 Conformance requirement

1) If the network performs a PS detach procedure with the cause 'location area not allowed' the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network performs a PS detach procedure with the cause 'location area not allowed' the User Equipment shall:

   2.1 perform combined PS attach when a new location area is entered.

   2.2 delete the list of forbidden LAs when power is switched off.

Reference

3GPP TS 24.008 clauses 4.7.4.2.

12.3.2.5.3 Test purpose

To test the behaviour of the UE if the network orders the PS detach procedure with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.3.2.5.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC2 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6, Not HPLMN).
All cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS orders a PS detach with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
5		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
6		->	ATTACH COMPLETE	
7		<-	DETACH REQUEST	Detach type = 're-attach not required' Cause 'Location Area not allowed'
8		->	DETACH ~~COMPLETE~~ACCEPT	
9	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
10		<-	PAGING TYPE1	Mobile identity = ~~IMSI~~TMSI-1 Paging order is for CS services.
11	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
12		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
13	~~->~~UE			No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell B.
14		SS		The SS deactivates cell A and activates cell B.
15	UE			Cell B is preferred by the UE.
16	UE			The UE initiates an attach automatically, by MMI or by AT command.
17	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
18	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
19		<-	PAGING TYPE1	Mobile identity = ~~IMSI~~TMSI-1 Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
21		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
22				No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell C.
23		SS		The SS deactivates cell B and activates cell C.
24	UE			Cell C is preferred by the UE. Step 25 is only performed for non-auto attach UE.
25	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI.
26	UE			The UE initiates an attach automatically (See ICS), by MMI or AT command.
27		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
28		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-6
29		->	ATTACH COMPLETE	
30		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
31		->	RRC CONNECTION REQUEST	
32		<-	RRC CONNECTION SETUP	
33		->	RRC CONNECTION SETUP COMPLETE	
34		->	PAGING RESPONSE	Mobile identity = TMSI-1
35		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
36		->	RRC CONNECTION RELEASE COMPLETE	
37		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
38		->	RRC CONNECTION REQUEST	
39		<-	RRC CONNECTION SETUP	
40		->	RRC CONNECTION SETUP COMPLETE	
41		->	SERVICE REQUEST	service type = "paging response"
42		<-	RRC CONNECTION RELEASE	
43		->	RRC CONNECTION RELEASE COMPLETE	
44	UE			The UE is switched off or power is removed (see ICS).
45		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
				The following messages are sent and shall be received on cell B.
46	UE			The SS deactivates cell C and activates cell B. Cell B is preferred by the UE.
47	UE			The UE is powered up or switched on and initiates an attach (see ICS). Step 48 is only performed for non-auto attach UE.
48	UE		Registration on CS	See TS34.108 Parameter mobile identity is TMSI-1
49	UE			UE initiates an attach automatically (see PICS), by MMI or AT commands.
50		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6 TMSI status = valid TMSI available
51		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-7
52		->	ATTACH COMPLETE	
53		<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
54		->	RRC CONNECTION REQUEST	
55		<-	RRC CONNECTION SETUP	
56		->	RRC CONNECTION SETUP COMPLETE	
57		->	PAGING RESPONSE	Mobile identity = TMSI-2
58		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
59		->	RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
60		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
61		->	RRC CONNECTION REQUEST	
62		<-	RRC CONNECTION SETUP	
63		->	RRC CONNECTION SETUP COMPLETE	
64		->	SERVICE REQUEST	service type = "paging response"
65		<-	RRC CONNECTION RELEASE	
66		->	RRC CONNECTION RELEASE COMPLETE	
67	UE			The UE is switched off or power is removed (see ICS).
68		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After the completion of the PS attach procedure, and~~At step8, when the UE receive the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'Location Area not allowed') from SS, UE shall:.

- send the DETACH ACCEPT message.

UE shall perform the following action depending on UE location.

1) UE is in the same location area.

At step9 and 18~~When in the same location area~~, UE shall:

- ~~-~~not perform ~~combined PS attach~~location updating procedure.

At step11 and 20, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for PS domain.

At step13 and 22, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step17, UE shall;

- not perform PS attach procedure.

2) UE is in the new location area.

At step27, UE shall;

- perform the combined PS attach procedure.

At step34, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step41, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step50, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence

At step57, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step64, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

~~- delete the stored RAI or LAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number~~

~~- store the LA in the 'forbidden location areas for regional provision of service'.~~

~~When a new location area is entered, UE shall:~~

~~- perform combined PS attach.~~

~~- delete the list of forbidden LAs when power is switched off.~~

12.3.2.6 PS detach / rejected / No Suitable Cells In Location Area

12.3.2.6.1 Definition

12.3.2.6.2 Conformance requirement

1. If the network performs a PS detach procedure with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   1.1 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.2 store the LA in the 'forbidden location areas for roaming'.

Reference

3GPP TS 24.008 clauses 4.7.4.2.

12.3.2.6.3 Test purpose

To test the behaviour of the UE if the network sends the DETACH REQUEST message with the cause 'No Suitable Cells In Location Area'.

12.3.2.6.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode II.

User Equipment:

The UE has valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS sends a DETACH REQUEST message with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall not perform combined PS attach while in the same location area on the same PLMN. The SS checks that the UE shall perform PS attach when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
	SS			The SS activates three cells simultaneously. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause 'No Suitable Cells In Location Area'
7	->		DETACH COMPLETE	
				The following message are sent and shall be received on cell B.
8	UE			The UE initiates an attach automatically, by MMI or by AT command.
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-•
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.3.2.6.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

-initiate a the PS attach procedure with the information elements specified in the above Expected Sequence ~~when the UE is powered up or switched on.~~

~~After the completion of the PS attach procedure, and when the UE receives the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'No Suitable Cells In Location Area') from SS, UE shall:~~

~~- delete the stored RAI or LAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.~~

- ~~store the LA or the PLMN identity in the 'forbidden location areas for roaming'.~~

At step9, ~~When~~ when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.4 Routing area updating procedure

This procedure is used to update the actual routing area of an UE in the network.

12.4.1 Normal routing area updating

The routing area updating procedure is a GMM procedure used by PS UEs of UE operation mode A or C that are IMSI attached for PS services only.

12.4.1.1 Routing area updating / accepted

12.4.1.1.1 Definition

12.4.1.1.2 Conformance requirement

1) If the network accepts the routing area updating procedure and reallocates a P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

2) If the network accepts the routing area updating procedure from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the routing area updating procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is reallocated.

2) Old P-TMSI / P-TMSI signature is not changed.

12.4.1.1.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI. The UE acknowledge the new P-TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. The UE will not answer signalling addressed to the old P-TMSI.

2) The UE sends a ROUTING AREA UPDATING REQUEST message. The SS accepts the P-TMSI and returns ROUTING AREA UPDATING ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the P-TMSI.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 22.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
10	->		ROUTING AREA UPDATING COMPLETE	
11	<-		GMM INFORMATION	Message sent with P-TMSI-1
11b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
13	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell A.
14		SS		Set the signal strength of cell A to a lower signal strength than cell B The RF level of cell B is lowered until cell A is preferred by the UE.

Step	Direction		Message	Comments
	UE	SS		
15	UE			Cell A is preferred by the UE.
16	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-4
17	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-2 signature Routing area identity = RAI-1
18	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE 1 (used for NW-mode II).
18a	->		RRC CONNECTION REQUEST	
18b	<-		RRC CONNECTION SETUP	
18c	->		RRC CONNECTION SETUP COMPLETE	
19	->		SERVICE REQUEST	service type = "paging response"
19a	<-		RRC CONNECTION RELEASE	
19b	->		RRC CONNECTION RELEASE COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
22	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 21.

Specific message contents

None.

12.4.1.1.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After completing the PS attach procedure, UE shall:,~~

- ~~initiate a routing area updating procedure with the information elements specified in the above Expected Sequence when the RF level of the attached cell is lower than the RF level of the new cell.~~
- ~~use the P-TMSI which is included in the ROUTING AREA UPDATING ACCEPT message.~~
- ~~acknowledge the new P-TMSI and continue communication with the new P-TMSI.~~
- ~~continue communication with the old P-TMSI.~~

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step13, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- not respond to the paging message for PS domain.

At step16, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step19, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.4.1.2 Routing area updating / rejected / IMSI invalid / illegal ME

12.4.1.2.1 Definition

12.4.1.2.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network rejects a routing area updating procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'Illegal ME'.

12.4.1.2.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).
All three cells are operating in network operation mode II (in case of UE operation mode A)

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'Illegal ME'. The SS checks that the UE does not perform PS attach in the same or another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Attach result = 'PS only attached' Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6	SS			The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' Routing area identity = RAI-1
9	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Illegal ME'
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
11	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
12	SS			The SS deactivates cell B and activates cell C.
13	UE			Cell C is preferred by the UE.
14	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
15	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
16	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
16a				Step 16b is only performed by UE in operation mode A
16b	UE		Registration on CS	See TS 34.108 Parameter mobile identity is IMSI.
17	->		ATTACH REQUEST	Attach type = 'PS only attached' Mobile identity = IMSI
18	<-		ATTACH ACCEPT	Attach result = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
19	->		ATTACH COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed.

Specific message contents

None.

12.4.1.2.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step11, after the routing area updating procedure is rejected with GMM cause = 'Illegal ME', UE shall;

- not respond to the paging message for PS domain.

~~After completing the PS attach procedure, UE shall:~~

- ~~initiate a routing area updating procedure with the information elements specified in the above Expected Sequence.~~
- ~~delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number .~~
- ~~consider the USIM as invalid for PS services until the UE is switched off or the USIM is removed.~~At step14, UE shall,

- not initiate PS attach procedure.

At step17, after the UE is powered up or USIM is replaced, UE shall;

- initiate the PS attach procedure.

12.4.1.3 Routing area updating / rejected / UE identity cannot be derived by the network

12.4.1.3.1 Definition

12.4.1.3.2 Conformance requirement

If the network rejects a routing area updating procedure from the User Equipment with the cause 'UE identity cannot be derived by the network', the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Depending on the manufacturer the UE may or may not perform a PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.3.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'UE identity cannot be derived by the network'.

12.4.1.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Automatic attach procedure when UE identity cannot be derived by the network Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal routing area updating with the cause value 'UE identity cannot be derived by the network'. The UE detach locally. A new PS attach may be performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS is set in network operation mode II and activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'UE identity cannot be derived by the network'
11	UE			If an automatic attach procedure by the UE is not possible when the UE identity cannot be derived by the network (see ICS) goto step 19.
12	UE			An Automatic PS attach procedure is initiated (see ICS).
13	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
14	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
15	->		ATTACH COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18				Stop the sequence
19	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
20	UE			No response from the UE to the request, as the UE has detached locally. This is checked for 10 seconds.

Specific message contents

None.

12.4.1.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step9, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the implementation of the UE.

Case 1) UE supports an Automatic PS attach procedure.

At step13, UE shall;

- initiate the PS attach procedure.

Case 2) UE does not support an Automatic PS attach procedure.

At step20, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

~~After completing the PS attach procedure, UE shall:~~

- ~~initiate a routing area updating procedure with the information elements specified in the above Expected Sequence.~~
- ~~delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.~~

12.4.1.4a Routing area updating / rejected / location area not allowed

12.4.1.4a.1 Definition

12.4.1.4a.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   1.1 not perform PS attach when in the same location area.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network rejects a routing area updating procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   2.1 perform PS attach when a new location area is entered.

   2.2 delete the list of forbidden LAs after switch off (power off).

Reference

3GPP TS 24.008 clauses 4.7.5.1.

12.4.1.4a.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.4.1.4a.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) , cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3).
All cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell C.
1		SS		The SS activates cell C.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 33.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell C is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell C and activates cell B.
8		SS		Cell B is preferred by the UE.
8a				The following step is only performed for UE Operation Mode A.
8b	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Location Area not allowed'
11	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
12	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell A.
13		SS		The SS deactivates cell B and activates cell A.
14	UE			Cell A is preferred by the UE.
15	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
				The following messages are sent and shall be received on cell C.
16		SS		The SS deactivates cell ~~B~~ A and activates cell C.
17	UE			Cell C is preferred by the UE.
17a				The following step is only performed for UE Operation Mode A.
17b	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
20	->		ATTACH COMPLETE	
21	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Step	Direction		Message	Comments
	UE	SS		
23	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
24	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
25	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
26	->		ATTACH COMPLETE	
	SS			The following messages are sent and shall be received on cell A.
27				The SS deactivates cell C and activates cell A.
28				Cell A is preferred by the UE.
28a				The following step is only performed for UE Operation Mode A.
28b	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI
29	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
30	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Update result = 'RA updated' Routing area identity = RAI-1
31	UE			The UE is switched off or power is removed (see ICS).
32	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
33	SS			The SS is set in network operation mode II.
34	UE			The UE is set in UE operation mode A (see ICS), cell A is switched off and the test is repeated from step 2 to step 32.

Specific message contents

None.

12.4.1.4a.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After completing the PS attach procedure~~At step9, UE shall:

- initiate ~~a~~ the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step12, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step12 and 15, ~~When~~ when in the same location area, UE shall

- not perform PS attach procedure~~.~~.

~~- store the LA in the 'forbidden location areas for regional provision of service'.~~

At step18, ~~When~~ when a new location area is entered, UE shall

- perform the PS attach procedure.

~~- delete the list of forbidden LAs when power is switched off.~~

At step24, when the USIM is replaced , UE shall;

- perform the PS attach procedure.

At step29, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

12.4.1.4b Routing area updating / rejected / No Suitable Cells In Location Area

12.4.1.4b.1 Definition

12.4.1.4b.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

1.1 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

1.2 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.

1.3 search for a suitable cell in a different location area on the same PLMN.

Reference

3GPP TS 24.008 clauses 4.7.5.1.

12.4.1.4b.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off'.

12.4.1.4b.4 Method of test

Initial condition

System Simulator:

Four cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4),

All three cells are operating in network operation mode II.

User Equipment:

The UE has valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following message are sent and shall be received on cell D.
1		SS		The SS activates cell D.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell D is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
5	->		ATTACH COMPLETE	
6		SS		The SS deactivates Cell D and activates Cell A, Cell B and Cell C. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C Cell A is preferred by the UE.
7	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-4
8	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'No Suitable Cells In Location Area' The following message are sent and shall be received on cell D.
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
11	->		ATTACH COMPLETE	
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.4b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when the UE is powered up or switched on~~.

At step7, UE shall;

- initiate the routing area updating procedure.

At step9, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

perform the PS attach procedure.~~After rejecting the PS attach procedure with the cause 'No Suitable Cells In Location Area, UE shall:~~

~~- delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.~~

~~- store the LA or the PLMN identity in the 'forbidden location areas for roaming'.~~

~~When the UE enters a suitable cell in a different location area on the same PLMN, UE shall:~~

- ~~perform PS attach.~~

12.4.1.5 Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes

12.4.1.5.1 Definition

12.4.1.5.2 Conformance requirement

When a routing area updating procedure is rejected with the attempt counter less than five, the UE shall repeat the routing area updating procedure after T3330 timeout.

When a T3330 timeout has occurred during a routing area updating procedure with the attempt counter five, the UE shall start timer T3302.

When the T3302 expire, a new routing area updating procedure shall be initiated.

~~GMM cause codes that can be selected are:~~

~~'IMSI unknown in HLR'~~

~~'IMEI not accepted'~~

~~'Illegal ME'~~

~~'UE identity cannot be derived by the network'~~

~~'Network failure'~~

~~'Congestion'~~

~~'retry upon entry into a new cell'~~

~~'Semantically incorrect message'~~

~~'Invalid mandatory information'~~

~~'Message type non-existent or not implemented'~~

~~'Message type not compatible with the protocol state'~~

~~'Information element non-existent or not implemented'~~

~~'Conditional IE error'~~

~~'Message not compatible with the protocol state'~~

~~'Protocol error, unspecified'~~

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.5.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.4.1.5.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). The ATT-flag shall indicate that the MS should use IMSI attach/detach procedures.
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure (attempt counter zero).

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter one) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter two) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter three) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter four) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure with attempt counter five (after T3311 expires).

The SS rejects the routing area updating procedure with a random cause code.

The UE shall not perform a new successful routing area updating procedure after T3311 seconds.

The UE initiates a routing area updating procedure with attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to ~~10~~ 12 minutes.

T3330; set to 15 seconds.

T3311; set to 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
2a	UE		Registration on CS	See TS 34.108 This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7		SS		Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Congestion'~~Random GMM cause~~
10		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
11	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
12	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Congestion'~~Random GMM cause~~
13		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
14	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
15	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Congestion'~~Random GMM cause~~
16		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
17	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
18	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Congestion'~~Random GMM cause~~
19		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
20	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
21	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Congestion'~~Random GMM cause~~
22		SS		The SS verifies that the UE does not attempt to attach for 10 minutes .

Step	Direction		Message	Comments
	UE	SS		
23		SS		The SS shall release the PS signalling connection.
23a		UE	Registration on CS	See TS 34.108 This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI.
24		->	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
25		<-	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
26		->	ROUTING AREA UPDATING COMPLETE	
27		UE		The UE is switched off or power is removed (see ICS).
28		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
29		->	IMSI DETACH INDICATION	This step is only performed for UE Operation Mode A. MS establish a RRC connection on lower layers to perform an IMSI detach. Message not sent if power is removed.

Specific message contents

None.

12.4.1.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step8, UE shall:

- perform the routing area updating procedure.

~~After completing the PS attach procedure,~~ UE shall ~~:~~

~~-~~perform the following actions depending on the conditions described below.

Case 1) At step11, 14, 17 and 20, a~~A~~ routing area updating procedure is rejected from SS with the attempt counter less than five.

UE shall:

- repeat the routing area updating procedure after T3330 timeout

Case2) At step22 a routing area updating procedure is rejected from SS with the attempt counter five ~~A timer T3330 timeout has occurred during a routing area updating procedure with the attempt counter five~~

At step22, UE shall:

- not initiate a routing area updating procedure. ~~start timer T3302~~

Case3) At step24, ~~The~~ the T3302 expires

UE shall:

- initiate ~~a~~ the new routing area updating procedure

12.4.1.6 Routing area updating / abnormal cases / change of cell into new routing area

12.4.1.6.1 Definition

12.4.1.6.2 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the UE shall abort the routing area updating procedure and re-initiate it in the new routing area.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.6.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.6.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) and cell C In MCC1/MNC1/LAC1/RAC3 (RAI-5).
All cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update into a new routing area. The UE shall re-initiate a routing area updating procedure in the new routing area.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2		UE		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 18.
3		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		SS		Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
10		SS		No response to the ROUTING AREA UPDATING REQUEST message is given by the SS
				The following messages are sent and shall be received on cell C.
11		SS		The SS deactivates cell B and activates cell C.
12		SS		Cell C is preferred by the UE.
13	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
14	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-5
15	->		ROUTING AREA UPDATING COMPLETE	
16		UE		The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18		SS		The SS is set in network operation mode II.
19		UE		The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 17.

Specific message contents

None.

12.4.1.6.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step9, ~~After completing the PS attach procedure,~~ UE shall:

- initiate the routing area update procedure.

At step13, ~~When~~ when change of cell into a new routing area is performed before the routing area updating procedure is finished, UE shall:

- abort the routing area updating procedure.
- re-initiate new routing area updating procedure in the new routing area.

12.4.1.7 Routing area updating / abnormal cases / change of cell during routing area updating procedure

12.4.1.7.1 Definition

12.4.1.7.2 Conformance requirement

When a change of cell within a new routing area is performed before the routing area updating procedure is finished, the UE shall perform the cell update before the routing area updating procedure is finished.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.7.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.7.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) and cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).
All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update within the routing area. The UE then waits for the ROUTING AREA UPDATE ACCEPT message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach result = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7		SS		Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9		SS		No response to the ROUTING AREA UPDATING REQUEST message is given by the SS
				The following messages are sent and shall be received on cell C.
10		SS		The SS deactivates cell B and activates cell C.
11		SS		Cell C is preferred by the UE.
12a	->		CELL UPDATE	Cell update cause = 'cell reselection'
12b		<-	CELL UPDATE CONFIRM	
13		<-	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After completing the PS attach procedure~~At step8, UE shall:

- initiate routing area update procedure.

At step12a, ~~When~~ when a change of cell within a new routing area is performed, UE shall:

- perform the cell update before the routing area updating procedure is finished.

12.4.1.8 Routing area updating / abnormal cases / P-TMSI reallocation procedure collision

12.4.1.8.1 Definition

12.4.1.8.2 Conformance requirement

When a P-TMSI REALLOCATION REQUEST message is received by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.8.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a P-TMSI reallocation procedure. The UE shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach result = 'PS attach' Mobile identity = IMSI
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		SS		Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-1
10	<-		P-TMSI REALLOCATION REQUEST	Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	UE			The UE ignores the P-TMSI reallocation request.
12	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
13	->		ROUTING AREA UPDATING COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.8.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step9, ~~After completing the PS attach procedure,~~ UE shall:

- initiate the routing area updating procedure.

At step11, ~~When~~ when a P-TMSI REALLOCATION ~~REQUEST~~ COMMAND message is received from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- ignore the P-TMSI reallocation procedure.
- continue with the routing area updating procedure.

12.4.2 Combined routing area updating

The combined routing area updating procedure is a GMM procedure used by PS UEs of UE operation mode A that are IMSI attached for PS and non-PS services. In order to use the combined routing area updating procedure, the network must operate in network operation mode I.

12.4.2.1 Combined routing area updating / combined RA/LA accepted

12.4.2.1.1 Definition

12.4.2.1.2 Conformance requirement

1) If the network accepts the combined routing area updating procedure and reallocates a P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

2) If the network accepts the combined routing area updating procedure from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.1.3 Test purpose

To test the behaviour of the UE if the network accepts the combined routing area updating procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is reallocated.

2) Old P-TMSI / P-TMSI signature is not changed.

3) Mobile terminating CS call is allowed with IMSI.

4) Mobile terminating CS call is allowed with TMSI.

12.4.2.1.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) A combined PS attach procedure is performed. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI, unassigns the TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI and IMSI. The UE acknowledge the new P-TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the IMSI is used

2) The UE is CS paged in order to verify that the IMSI is used for CS calls.

3) A combined PS attach procedure is performed. The UE sends an ROUTING AREA UPDATING REQUEST message. The SS accepts the P-TMSI signature and returns ROUTING AREA UPDATING ACCEPT message without any P-TMSI and with a new TMSI. The UE acknowledge the new TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication UE-SS is performed by the old P-TMSI. For CS calls, the new TMSI is used.

4) The UE is CS paged in order to verify that the TMSI is used for CS calls.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6	SS			Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
7	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
9	->		ROUTING AREA UPDATING COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	->		RRC CONNECTION REQUEST	
10b	<-		RRC CONNECTION SETUP	
10c	->		RRC CONNECTION SETUP COMPLETE	
11	->		SERVICE REQUEST	service type = "paging response"
11a	<-		RRC CONNECTION RELEASE	
11b	->		RRC CONNECTION RELEASE COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
13	->		RRC CONNECTION REQUEST	
14	<-		RRC CONNECTION SETUP	
15	->		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
16	->		PAGING RESPONSE	Mobile identity = IMSI
17	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
18	->		RRC CONNECTION RELEASE COMPLETE	
19	SS			The following messages are sent and shall be received on cell A. The RF level of cell A is increased and the RF level of cell B is lowered until cell A is preferred by the UE.
20	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
21	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' ~~Mobile identity = P-TMSI-2~~No P-TMSI P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
22	->		ROUTING AREA UPDATING COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = P-TMSI-~~2~~1 Paging order is for PS services.
23a	->		RRC CONNECTION REQUEST	
23b	<-		RRC CONNECTION SETUP	
23c	->		RRC CONNECTION SETUP COMPLETE	
24	->		SERVICE REQUEST	service type = "paging response"
24a	<-		RRC CONNECTION RELEASE	
24b	->		RRC CONNECTION RELEASE COMPLETE	
25	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
26	->		RRC CONNECTION REQUEST	
27	<-		RRC CONNECTION SETUP	
28	->		RRC CONNECTION SETUP COMPLETE	
29	->		PAGING RESPONSE	Mobile identity = TMSI-1
30	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31	->		RRC CONNECTION RELEASE COMPLETE	
32	UE			The UE is switched off or power is removed (see ICS).
33	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.2.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell, ~~After completing the PS attach procedure,~~ UE shall:

- ~~—~~initiate ~~a~~ the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence ~~when RF level of the attached cell is lower than the RF level of the new cell~~.

At step9, UE shall:

- ~~—~~acknowledge the new P-TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step11, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step16, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step20, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step22, UE shall:

- acknowledge the new TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step24, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step29, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

~~— continue communication with the new P-TMSI If SS reallocates a P-TMSI.~~

~~— continue communication with the old P-TMSI If SS does not reallocate the old P-TMSI.~~

12.4.2.2 Combined routing area updating / UE in CS operation at change of RA

12.4.2.2.1 Definition

12.4.2.2.2 Conformance requirement

PS UE in UE operation mode A that is in an ongoing CS transaction at change of routing area shall initiate the normal routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.2.3 Test purpose

To test the behaviour of the UE if the routing area is changed during an ongoing circuit switched transmission.

12.4.2.2.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A combined PS attach procedure is performed. The UE in UE operation mode A initiates a CS call. The routing area change. The UE will perform the normal routing area updating procedure durng the ongoing circuit-switched transaction.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			A CS call is initiated.
				The following messages are sent and shall be received on cell B.
7		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
10	->		ROUTING AREA UPDATING COMPLETE	
11	<-		PAGING TYPE2	Mobile identity = P-TMSI-1 Paging order is for PS services.
12	->		SERVICE REQUEST	service type = "paging response"
13		SS		The SS initiates the RRC connection release.
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.2.2.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell during the CS connection, ~~After completing the PS attach procedure,~~ UE shall:

- ~~initiate a CS call. at change of routing area.~~

- initiate ~~a~~ the normal routing area updating procedure~~during the CS connection~~.

12.4.2.3 Combined routing area updating / RA only accepted

12.4.2.3.1 Definition

12.4.2.3.2 Conformance requirement

1) If the network accepts the combined PS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the UE the User Equipment shall delete the stored TMSI, LAI and CKSN. The User Equipment shall consider USIM invalid for non-PS services until power is switched off or USIM is removed.

2) If the network accepts the combined PS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the UE, an UE operation mode A UE may perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.5~~3~~.2.

12.4.2.3.3 Test purpose

Test porpose1

To test the behaviour of the UE if the network accepts the routing area updating procedure with indication RA only, GMM cause 'IMSI unknown in HLR'.

Test porpose2

To test the behaviour of the UE if the network accepts the routing area updating procedure with indication RA only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

12.4.2.3.4 Method of test

Test Procedure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells operating in network operation mode I.

User Equipment:

The UE has a valid ~~ITMSI~~IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

After attach, the UE sends an ROUTING AREA UPDATE REQUEST message. The SS allocates a P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication UE - SS is performed by the P-TMSI. CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6	SS			The SS deactivates cell A and activates cell B.
7	->		ROUTING AREA ~~UPDATING~~ UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATE~~UPDATING~~ ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'IMSI unknown in HLR'
9	->		ROUTING AREA UPDATE~~UPDATING~~ COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	->		RRC CONNECTION REQUEST	
10b	<-		RRC CONNECTION SETUP	
10c	->		RRC CONNECTION SETUP COMPLETE	
11	->		SERVICE REQUEST	service type = "paging response"
11a	<-		RRC CONNECTION RELEASE	
11b	->		RRC CONNECTION RELEASE COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
13	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Test Procedure2

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Automatic MM IMSI attach procedure for UE operation mode A UE Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

After attach, the UE sends an ROUTING AREA UPDATE REQUEST message . The SS allocates a new P-TMSI signature and returns ROUTING AREA UPDATE ACCEPT message. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. This procedure is repeated until the routing area updating attempt counter is equal to five. An UE operation mode A UE may perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. It is further verified that the UE after a successful IMSI attach procedure can perform CS services.~~CS services are not possible unless an IMSI attach procedure is performed.~~

Expected Sequence

Dependent whether the option 'Automatic MM IMSI attach procedure for UE operation mode A UE' is not supported or not, the steps 1-13 or 14-35 apply depending on manufacturer (see ICS).

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following messages are sent and shall be received on cell A The UE is set in UE operation mode A and no automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. The SS deactivates cell A and activates cell B.
7	->		ROUTING AREA UPDATE~~UPDATING~~ REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
8		<-	ROUTING AREA UPDATEUPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
9		->	ROUTING AREA UPDATEUPDATING COMPLETE	
10				The routing area updating attempt counter =1. The combined routing area updating procedure is reinitialised at the expiry of T3311
11		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating• with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
12		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
13		->	ROUTING AREA UPDATE COMPLETE	
14				The routing area updating attempt counter =2. The combined routing area updating procedure is reinitialised at the expiry of T3311
15		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating• with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
16		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
17		->	ROUTING AREA UPDATE COMPLETE	
18				The routing area updating attempt counter =3. The combined routing area updating procedure is reinitialised at the expiry of T3311
19		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating• with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
20		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
21		->	ROUTING AREA UPDATE COMPLETE	
22				The routing area updating attempt counter =4. The combined routing area updating procedure is reinitialised at the expiry of T3311

Step	Direction		Message	Comments
	UE	SS		
23	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating• with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
24	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
25	->		ROUTING AREA UPDATE COMPLETE	
26				The routing area updating attempt counter =5. The combined routing area updating procedure is reinitialised at the expiry of T3311
~~10~~	~~<-~~		~~PAGING TYPE1~~	~~Mobile identity = IMSI~~ ~~Paging order is for CS services.~~
~~11~~	~~UE~~			~~The UE shall not initiate an RRC connection.~~ ~~This is checked during 3 seconds.~~
27~~12~~	UE			The UE is switched off or power is removed (see ICS).
28~~13~~	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach' Stop the sequence.
				The following messages are sent and shall be received on cell B
~~14~~29	UE			The UE is set in UE operation mode A and ~~Automatic~~ automatic MM IMSI attach procedure is indicated (see ICS).
30~~15~~	UE			The UE is powered up or switched on and initiates an attach (see ICS).
31~~16~~	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
32~~17~~	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
33~~18~~	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell A.
34~~19~~	SS			The SS deactivates cell B and activates cell A.
35~~20~~	->		ROUTING AREA UPDATE~~UPDATING~~ REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
~~21~~36	<-		ROUTING AREA UPDATE~~UPDATING~~ ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
~~22~~37	->		ROUTING AREA UPDATE~~UPDATING~~ COMPLETE	
38				The routing area updating attempt counter =1. The combined routing area updating procedure is reinitialised at the expiry of T3311
39	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating• with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
40	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
41	->		ROUTING AREA UPDATE COMPLETE	
42				The routing area updating attempt counter =2. The combined routing area updating procedure is reinitialised at the expiry of T3311
43	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating• with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
44	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
45	->		ROUTING AREA UPDATE COMPLETE	
46				The routing area updating attempt counter =3. The combined routing area updating procedure is reinitialised at the expiry of T3311
47	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating• with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
48	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
49	->		ROUTING AREA UPDATE COMPLETE	
50				The routing area updating attempt counter =4. The combined routing area updating procedure is reinitialised at the expiry of T3311
51	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating•with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
52	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
53	->		ROUTING AREA UPDATE COMPLETE	
54				The routing area updating attempt counter =5.
~~22~~	~~->~~		~~ROUTING AREA UPDATING COMPLETE~~	

Step	Direction		Message	Comments
	UE	SS		
2355	-> UE		RRC CONNECTION REQUEST Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI-1.
24		<-	RRC CONNECTION SETUP	
25		->	RRC CONNECTION SETUP COMPLETE	
26		->	LOCATION UPDATING REQ	Location updating type = IMSI attach.
27		<-	LOCATION UPDATING ACC	The SS allocates a new TMSI.
28		->	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
29		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
30		->	RRC CONNECTION RELEASE COMPLETE	
5631		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
5732		->	RRC CONNECTION REQUEST	
5833		<-	RRC CONNECTION SETUP	
5934		->	RRC CONNECTION SETUP COMPLETE	
6035		->	PAGING RESPONSE	Mobile identity = TMSI-1
6136		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
6237		->	RRC CONNECTION RELEASE COMPLETE	
6338	UE			The UE is switched off or power is removed (see ICS).
6439		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.2.3.5 Test requirements

Test requirements for Test Procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After completing the PS attach procedure~~At step7, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate ~~a~~ the combined routing area updating procedure.

~~perform the following actions depending on the GMM cause.~~At step9, UE shall:

- acknowledge the new P-TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step11, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step13, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

~~Case 1) GMM cause = 'IMSI unknown in HLR'.~~

~~UE shall:~~

~~- delete the stored TMSI, LAI and CKSN.~~

~~- consider USIM invalid for non-PS services until power is switched off or USIM is removed.~~

~~Case 2) GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.~~

~~UE shall:~~

~~- perform an MM IMSI attach procedure. (only applied UE operation mode A)~~

Test requirements for Test Procedure2

At step3 and 31, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step6 and 35, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area updating procedure.

At step11, 15, 19 and 23, UE shall:

- re-initiate the combined routing area updating procedure.

At step39, 43, 47 and 51, UE shall:

- re-initiate the combined routing area updating procedure.

At step55, UE shall:

- perform MM location updating procedure.

At step60, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

12.4.2.4 Combined routing area updating / rejected / PLMN not allowed

12.4.2.4.1 Definition

12.4.2.4.2 Conformance requirement

1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall:

   1.1 not perform combined GPRA attach when switched on in the same location area or PLMN.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI, P-TMSI signature, TMSI CKSN andLAI.

   1.3 store the PLMN in the 'forbidden PLMN list'.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.4.3 Test purpose

To test the behaviour of the UE if the network rejects the combined routing area updating procedure of the UE with the cause 'PLMN not allowed'.

12.4.2.4.4 Method of test

Initial condition

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2).
All four cells are operating in network operation mode I

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'PLMN not allowed'. The SS checks that the UE does not perform PS attach if activated in the same PLMN. The SS checks that the UE does not perform IMSI attach if activated in the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = TMSI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'PLMN not allowed'
11	UE			The UE initiates an attach by MMI or AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
15		SS		The SS deactivates cell B and activates cell C.
16	UE			Cell C is preferred by the UE.
17	UE			The UE initiates an attach by MMI or by AT command.
18	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
19	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
				The following messages are sent and shall be received on cell A.
21		SS		The SS deactivates cell C and activates cell A.
22	UE			Cell A is preferred by the UE.
23	UE			The UE initiates an attach by MMI or by AT command.
24	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
25	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
26	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell D.
27		SS		The SS deactivates cell A and activates cell D.
28	UE			Cell D is preferred by the UE.

Step	Direction		Message	Comments
	UE	SS		
28a	UE		Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE.
29	UE			The UE initiates an attach automatically(see PICS), by MMI or by AT command.
30	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
31	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Mobile identity = IMSI
32	->		ATTACH COMPLETE	
33	UE			The UE is switched off or power is removed (see ICS).
34	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.2.4.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell~~After completing the PS attach procedure~~, UE shall:

- ~~-~~ initiate ~~a~~ the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step12, 18 and 24, UE shall:

- not initiate a PS attach procedure.

At step14, 20 and 26, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step20, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step30, UE shall:

- perform the PS attach procedure.

~~- delete the stored P-TMSI, P-TMSI signature, TMSI, RAI, LAI, ciphering key sequence number PS ciphering key sequence number.~~

~~- reset the location update attempt counter when UE receive the ROUTING AREA UPDATING REJECT message(GMM cause = 'PLMN not allowed') from SS.~~

~~- store the PLMN identity in the 'forbidden PLMN list'.~~

~~not perform combined PS attach procedure when the UE is switched on in the same PLMN.~~

12.4.2.5a Combined routing area updating / rejected / roaming not allowed in this location area

12.4.2.5a.1 Definition

12.4.2.5a.2 Conformance requirement

1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment ~~shall~~:

   1.1 shall not perform combined PS attach when in the same location area.

   1.2 shall delete the stored RAI, PS-CKSN, P-TMSI P-TMSI signature, TMSI, CKSN and LAI.

   1.3 shall store the LA in the 'forbidden location areas for roaming'.

   1.4 may perform combined PS attach when a new location area is entered.

2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.5a.3 Test purpose

Test purpose1

To test that on receipt of a rejection using the 'Roaming not allowed in this area' cause code, the UE ceases trying a routing area updating procedure on that location area. Successful combined routing area updating procedure is possible in other location areas.

Test purpose2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

12.4.2.5a.4 Method of test

12.4.2.5a.4.1 Test ~~procesure1~~procedure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC2~~1~~/MNC1/LAC1/RAC1 (RAI-2~~1~~), cell B in MCC2~~1~~/MNC1/LAC2/RAC1 (RAI-6~~3~~).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. A new attempt for a combined PS attach is not possible. Successful combined PS attach procedure is performed in another location area. The UE is ~~mobed~~ moved back to the 1st location area. A combined routing area updating shall not be performed, as the LA is on the forbidden list.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-21 Mobile identity = ~~IMSI~~TMSI-1
5		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9		->	ROUTING AREA UPDATE~~UPDATING~~ REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-21 ~~TMSI status = no valid TMSI available~~
10		<-	ROUTING AREA UPDATE~~UPDATING~~ REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15		<-	PAGING TYPE1	Mobile identity = ~~IMSI~~TMSI-1 Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
				The following messages are sent and shall be received on cell A.
17		SS		The SS deactivates cell B and activates cell A.
18	UE			Cell A is preferred by the UE.
18a	UE		Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE.
19	UE			The UE initiates an attach automatically(see ICS), by MMI or by AT command.
20		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
21		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-61 Mobile identity = TMSI-1
22		->	ATTACH COMPLETE	
23		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24		->	RRC CONNECTION REQUEST	
25		<-	RRC CONNECTION SETUP	
26		->	RRC CONNECTION SETUP COMPLETE	
27		->	PAGING RESPONSE	Mobile identity = TMSI-1

Step	Direction		Message	Comments
	UE	SS		
28		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
29		->	RRC CONNECTION RELEASE COMPLETE	
30		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
30a		->	RRC CONNECTION REQUEST	
30b		<-	RRC CONNECTION SETUP	
30c		->	RRC CONNECTION SETUP COMPLETE	
31		->	SERVICE REQUEST	service type = "paging response"
31a		<-	RRC CONNECTION RELEASE	
31b		->	RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell B.
32	SS			The SS deactivates cell A and activates cell B.
33	UE			No ROUTING AREA UPDATE~~UPDATING~~ REQUEST sent to SS (SS waits 30 seconds).
34		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
35	UE			No response from the UE to the request. This is checked for 10 seconds.
~~36~~		~~<-~~	~~PAGING TYPE1~~	~~Mobile identity = IMSI~~ ~~Paging order is for CS services.~~
~~37~~	~~UE~~			~~The UE shall not initiate an RRC connection.~~ ~~This is checked during 3 seconds.~~

12.4.2.5a.4.2 Test ~~procesure2~~procedure2

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC2~~1~~/MNC1/LAC1/RAC1 (RAI-2~~1~~), cell B in MCC2~~1~~/MNC1/LAC2/RAC1 (RAI-6~~3~~).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid ~~P-TMSI-1, P-TMSI-1 signature and RAI-1~~IMSI. UE is Idle Updated on cell A.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 seconds and switched on again. The SS checks that a combined PS attach is possible on the cell on which the previous combined routing area updating had been rejected.

If USIM removal is possible without switching off:
The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. The USIM is removed and inserted in the UE. The SS checks that a PS attach procedure and routing area updating procedure is possible on the cell on which the routing area updating had previously been rejected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-21 Mobile identity = ~~IMSI~~TMSI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATE~~UPDATING~~ REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-21 ~~TMSI status = no valid TMSI available~~
10	<-		ROUTING AREA UPDATE~~UPDATING~~ REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	<-		PAGING TYPE1	Mobile identity = TMSI-1~~IMSI~~ Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
18	UE			The UE gets the USIM replaced, is powered up or switched on ~~and initiates an attach (see ICS)~~.
18a	UE		Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE.
19	UE			The UE initiates an attach automatically (see PICS) by MMI or AT command.
20	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
21	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-61 Mobile identity = TMSI-1
22	->		ATTACH COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24	->		RRC CONNECTION REQUEST	
25	<-		RRC CONNECTION SETUP	

Step	Direction		Message	Comments
	UE	SS		
26	->		RRC CONNECTION SETUP COMPLETE	
27	->		PAGING RESPONSE	Mobile identity = TMSI-1
28	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
29	->		RRC CONNECTION RELEASE COMPLETE	
30	<-		PAGING TYPE1	Mobile identity = P-TMSI-1
30a	->		RRC CONNECTION REQUEST	
30b	<-		RRC CONNECTION SETUP	
30c	->		RRC CONNECTION SETUP COMPLETE	
31	->		SERVICE REQUEST	service type = "paging response"
31a	<-		RRC CONNECTION RELEASE	
31b	->		RRC CONNECTION RELEASE COMPLETE	
32	UE			The UE is switched off or power is removed (see ICS).
33	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.5a.5 Test requirements

Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell~~After completing the PS attach procedure~~, UE shall:

- ~~—~~initiate ~~a~~ the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence

At step12, when the SS rejects the combined routing area update procedure with GMM cause = 'Roaming not allowed in this area', UE shall:

- not initiate a PS attach procedure.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step20, UE shall:

- initiate the combined PS attach procedure.

At step27, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step31, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step35, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step20, UE shall:

- initiate the combined PS attach procedure.

At step27, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step31, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

- ~~delete the stored P-TMSI, P-TMSI signature, TMSI, RAI, LAI, ciphering key sequence number PS ciphering key sequence number.~~

- ~~reset the location update attempt counter when UE receive the ROUTING AREA UPDATING REJECT message(GMM cause = 'Roaming not allowed in this area') from SS.~~

- ~~store the LAI in the 'forbidden location areas for roaming'.~~

- ~~not perform combined PS attach procedure when the UE is switched on in the same location area.~~

- ~~perform combined PS attach procedure when a new location area is entered.~~

12.4.2.5b Combined routing area updating / rejected / No Suitable Cells In Location Area.

12.4.2.5b.1 Definition

12.4.2.5b.2 Conformance requirement

1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

   1.1 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.2 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.

1.3 search for a suitable cell in a different location area on the same PLMN.

Reference

3GPP TS 24.008 clauses 4.7.5.2.

12.4.2.5b.3 Test purpose

To test the behaviour of the UE if the network rejects a combined routing area updating procedure of the UE with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off'.

12.4.2.5b.4 Method of test

Initial condition

System Simulator:

Four cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4),

All three cells are operating in network operation mode II.

User Equipment:

The UE has valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following message are sent and shall be received on cell D.
1		SS		The SS activates cell D.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell D is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
6		SS		The SS deactivates Cell D and activates Cell A, Cell B and Cell C. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C Cell A is preferred by the UE.
7	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4
8	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'No Suitable Cells In Location Area'
				The following message are sent and shall be received on cell B.
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attached' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
11	->		ATTACH COMPLETE	
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.2.5b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the Combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when the UE is powered up or switched on~~.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell ~~After rejecting the Combined PS attach procedure with the cause 'No Suitable Cells In Location Area~~, UE shall:

- initiate the combined routing area update procedure.

~~- delete the stored RAI, PS CKSN, P TMSI and P TMSI signature.~~

~~- store the LA or the PLMN identity in the 'forbidden location areas for roaming'.~~

At step9, ~~When~~ when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.4.2.6 Combined routing area updating / abnormal cases / access barred due to access class control

12.4.2.6.1 Definition

12.4.2.6.2 Conformance requirement

1) The UE shall not perform combined routing area updating procedure, but stays in the current serving cell and applies normal cell reselection process.

2) The User Equipment shall perform the combined routing area updating procedure when:

   2.1 Access is granted.

   2.2 Cell is changed.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.6.3 Test purpose

Test porpose1

To test the behaviour of the UE in case of access class control (access is granted).

Test porpose2

To test the behaviour of the UE in case of access class control (cell is changed).

12.4.2.6.4 Method of test

12.4.2.6.4.1 Test procedure1

Initial condition

A random access class x (0-15) is selected. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred.

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode I.
Access class x barred.

User Equipment:

The UE has valid IMSI. UE is Idle Updated on cell A.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

The SS indicates that access class x is not barred. A routing area updating procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	UE			No ROUTING AREA UPDATE REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
10		SS		The access class x is not barred anymore.
11	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
12	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-4
13	->		ROUTING AREA UPDATING COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.6.4.2 Test procedure2

Initial condition

A random access class x (0-15) is selected. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell A.

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x not barred, cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) has access class x barred, cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4)

has access class x not barred.
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A routing area updating procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	UE			No ROUTING AREA UPDATING REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
10		SS		The SS deactivates cell B and activates cell C.
11	UE			Cell C is preferred by the UE.
12	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.6.5 Test requirements

Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step8, when the access class x is barred ~~After completing the PS attach procedure,~~ UE shall:

- not perform the combined routing area updating procedure.

~~- stay in the current serving cell.~~

~~- apply the normal cell reselection process.(as access class X is barred)~~

~~- perform the combined routing area updating procedure when the barred state is removed or because of a cell change.~~At step10, when the access class x is not barred, UE shall:

- perform the combined routing area updating procedure.

Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step8, when the access class x is barred UE shall:

- not perform the combined routing area updating procedure.

At step11, when the serving cell is changed, UE shall:

- perform the combined routing area updating procedure.

12.4.2.7 Combined routing area updating / abnormal cases / attempt counter check / procedure timeout

12.4.2.7.1 Definition

12.4.2.7.2 Conformance requirement

1) When a T3330 timeout has occurred during a routing area updating procedure, the UE shall repeat the routing area updating procedure after T3330 timeout until the procedure is repeated five times.

2) When a routing area updating procedure is repeated five times, the routing area updating attempt counter is incremented and five more routing area updating procedures are performed. This procedure is repeated until the routing area updating attempt counter is five, the UEshall then start timer T3302.

3) When the T3302 expire, a new routing area updating procedure shall be initiated.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.7.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.4.2.7.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure (routing area updating attempt counter zero). The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter one) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter two) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter three) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter four) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and as the routing area updating attempt counter is five. T3302 is started.

The UE initiates a routing area updating procedure with routing area updating attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 12 minutes.

T3311; 15 seconds.

T3330; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6~~7~~		SS		The SS deactivates cell A and activates cell B.
7~~8~~	UE			Cell B is preferred by the UE. K = 1.
8~~9~~		->	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k (k is not visible. It is only used for clarifying the sequence.) Retransmission counter = 0
9~~10~~		SS		No response is given from the SS.
10~~11~~		SS		The SS verifies that the time between the RA update requests is T3330seconds
11~~12~~		->	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 1
12~~13~~		SS		No response is given from the SS.
13~~14~~		SS		The SS verifies that the time between the RA update requests is T3330seconds
14~~15~~		->	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 2
15~~16~~		SS		No response is given from the SS.
16~~17~~		SS		The SS verifies that the time between the RA update requests is T3330seconds
17~~18~~		->	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 3
18~~19~~		SS		No response is given from the SS.
19~~20~~		SS		The SS verifies that the time between the RA update requests is T3330seconds
20~~21~~		->	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 4
21~~22~~		SS		No response is given from the SS.

Step	Direction		Message	Comments
	UE	SS		
22~~23~~		SS		The SS verifies that the time between the RA update requests is T3311 + T3330 seconds.
23~~24~~		SS		Step 9 – 23 is repeated four times with k = 2, k = 3, k = 4 and k = 5
24~~23~~		SS		The SS verifies that the time between the RA update requests is T3302 + T3330 seconds
25~~24~~		->	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
26~~25~~		<-	ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
27~~26~~		->	ROUTING AREA UPDATING COMPLETE	
28~~27~~		UE		The UE is switched off or power is removed (see ICS).
29~~28~~		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.7.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- ~~—~~initiate ~~a~~ the combined PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell,

~~After completing the PS attach procedure,~~ UE shall:

~~—~~initiate ~~a~~ the combined routing area updating procedure with information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~—~~UE shall perform the following actions depending on the conditions described below.

Case 1) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter less than five and the Retransmission counter less than five

At step11, 14, 17 and 20, UE shall:

- repeat the combined routing area updating procedure after the timer T3330 timeout

Case2) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter less than five and the Retansmission counter five

At step22, UE shall:

- ~~start the timer T3311~~not repeat the combined routing area updating procedure.

Case 3) A timer T3311 timeout has occurred and the Routing area attempt counter is less than five,~~occoured~~

At step23, UE shall:

~~— reset the Retransmission counter and increase the Routing area attempt counter~~

- repeat the combined routing area updating procedure

Case 4) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter five and the Retansmission counter five.

At step24, UE shall:

- not initiate a routing area updating procedure. ~~start the timer T3302~~

Case5) The timer T3302 expires

At step25, UE shall:

- initiate ~~a~~ the new routing area updating procedure

12.4.2.8 Combined routing area updating / abnormal cases / change of cell into new routing area

12.4.2.8.1 Definition

12.4.2.8.2 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the UE shall abort the routing area updating procedure and re-initiate it in the new routing area.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.8.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC1/RAC3 (RAI-5).
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update into a new routing area. The UE shall re-initiate a routing area updating procedure in the new routing area. The UE shall not increment the attempt counter.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		No response id given from the SS.
				The following messages are sent and shall be received on cell C.
10		SS		Activate cell C with a lower signal strength than cell B.
11	UE			The RF level of cell B is lowered, and the RF level of cell C is increased, until cell C is preferred by the UE.
12	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-5
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.8.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell ~~After completing the PS attach procedure~~, UE shall:

- initiate the routing area update procedure.

At step12, ~~When~~ when change of cell into new routing area is performed before the routing area updating procedure is finished, UE shall:

- abort the routing area updating procedure.
- re-initiate new routing area updating procedure in the new routing area.

12.4.2.9 Combined routing area updating / abnormal cases / change of cell during routing area updating procedure

12.4.2.9.1 Definition

12.4.2.9.2 Conformance requirement

When a change of cell within new routing area is performed before the routing area updating procedure is finished, the UE shall perform the cell update before the routing area updating procedure is finished.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.9.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI. UE is Idle Updated on cell A.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update within the routing area. The UE then waits for the ROUTING AREA UPDATE ACCEPT message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		No response id given from the SS.
				The following messages are sent and shall be received on cell C.
10		SS		Activate cell C with a lower signal strength than cell B.
11	UE			The RF level of cell B is lowered until cell C is preferred by the UE.
12a	->		CELL UPDATE	Cell update cause = 'cell reselection'
12b	<-		CELL UPDATE CONFIRM	
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell ~~After completing the PS attach procedure~~, UE shall:

- initiate routing area update procedure.

At step12a, ~~When~~ when a change of cell within a new routing area is performed before the routing area updating procedure is finished, UE shall:

- perform the cell update.

12.4.2.10 Combined routing area updating / abnormal cases / PS detach procedure collision

12.4.2.10.1 Definition

12.4.2.10.2 Conformance requirement

1) When a detach request is received with cause 'PS detach' or 'combined PS/IMSI detach' by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall terminate the routing area updating procedure and continue with the PS detach procedure.

2) When a detach request is received with cause 'IMSI detach' by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall ignore the detach request and continue with the routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.2.10.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.10.4 Method of test

12.4.2.10.4.1 Test procedure1

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a PS detach procedure with cause 'PS detach' or 'combined PS/IMSI detach'. The UE shall terminate the routing area updating procedure and continue with the PS detach procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		The SS ignores the ROUTING AREA UPDATING REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 're-attach not required'
11	->		DETACH ACCEPT	

Specific message contents

None.

12.4.2.10.4.2 Test procedure2

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a PS detach procedure with cause 'IMSI detach'. The UE shall ignore the detach procedure and continue with the routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		The SS ignores the ROUTING AREA UPDATING REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 'IMSI detach'
11	UE			The UE ignores the DETACH REQUEST message and continue the routing area updating procedure.
12	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
13	->		ROUTING AREA UPDATING COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.10.5 Test requirements

Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell ~~After completing the PS attach procedure~~, UE shall:

- initiate routing area update procedure.

~~perform the follow actions depending on the conditions described below.~~

At step11, when the

~~Case 1)~~ UE receives a DETACH REQUEST message with cause 'PS detach' or 'combined PS/IMSI detach' from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- ~~—~~terminate the routing area updating procedure

- ~~—~~continue with the PS detach procedure.

Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate routing area update procedure.

At step11, the UE receives a DETACH REQUEST message with cause 'IMSI detach' from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- ignore the detach request procedure.

- continue with the routing area updating procedure.

~~Case 2) UE receives a DETACH REQUEST message with cause 'IMSI detach' from SS while waiting for a ROUTING AREA UPDATING ACCEPT message, UE shall:~~

- ~~ignore the detach request.~~

- ~~continue with the routing area updating procedure.~~

12.4.3 Periodic routing area updating

12.4.3.1 Periodic routing area updating / accepted

12.4.3.1.1 Definition

12.4.3.1.2 Conformance requirement

The User Equipment shall perform a periodic routing area update procedure after a T3312 timeout.

Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.1.

12.4.3.1.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure with identity P-TMSI. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. A routing area updating procedure is performed at T3312 timeout.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 11.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
5	->		ATTACH COMPLETE	
6	->		ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
7		SS		The SS verifies that the time between the attach and the periodic RA updating is T3312
8	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1
9	UE			The UE is switched off or power is removed (see ICS).
10	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
11				The SS is set in network operation mode II.
12	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 10.

Specific message contents

None.

12.4.3.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- ~~—~~initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step6, when the timer T3312 is expired, UE shall:

- ~~set and start the timer T3312 when the ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message from SS. The value of the timer T3312 is sent by SS to UE in ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message.~~
- initiate ~~a~~ the routing area updating procedure with Update type = 'Periodic updating' ~~when the timer T3312 is expired~~.

12.4.3.2 Periodic routing area updating / accepted / T3312 default value

12.4.3.2.1 Definition

12.4.3.2.2 Conformance requirement

The User Equipment shall perform a periodic routing area update procedure after a T3312 timeout.

Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.2.

12.4.3.2.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a combined PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312 is omitted. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. After 54 minutes, a periodic routing area updating procedure is initiated by the UE.

T3312; default value 54 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
3	<-		ATTACH ACCEPT	Attach result = 'Combined PS /IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 T3312 = 54 min
4	->		ATTACH COMPLETE	
5	->		ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE not present.
6	SS			The SS verifies that the time between the attach request and the periodic RA updating is T3312
7	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI and TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature Routing area identity = RAI-1
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.3.2.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- ~~-~~initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~- set and start the timer T3312 when the ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message from SS.~~

At step5, when the timer T3312 is expired, UE shall:

- initiate ~~a~~ the routing area updating procedure with Update type = 'Periodic updating' ~~when the timer T3312 is expired~~.

12.4.3.3 Periodic routing area updating / no cell available / network mode I

12.4.3.3.1 Definition

12.4.3.3.2 Conformance requirement

If the UE is both IMSI attached for PS and non-PS services, and if the UE lost coverage of the registered PLMN and timer T3312 expires; if the UE returns to coverage in a cell that supports PS and the network is in network operation mode I, then the UE shall perform a combined routing area update procedure.

Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.1.

12.4.3.3.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.3.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Cell A is operating in network operation mode II and cell B is in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Idle updated on Cell A

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. PS radio contact is distorted before T3312 timeout. PS radio contact is established again (after T3312 timeout), and a routing area updating procedure is performed immediately.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2		SS		The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
6	->		ATTACH COMPLETE	
7		SS		After 5 minutes, the signal strength is lowered until the UE have lost contact with the SS.
8		SS		Wait 2 minutes.
				The following messages are sent and shall be received on cell B.
9		SS		The SS deactivates cell A and activates cell B.
10	UE			Cell B is preferred by the UE.
11	UE			The UE immediately start a combined RA updating procedure
12	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-3 P-TMSI-3 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
14	->		ROUTING AREA UPDATE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.3.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step12, ~~When~~ when the UE is both IMSI attached for PS and non-PS service , and if the UE lost coverage of the reiterated PLMN and the timer T3312 expires, if the UE returns to coverage in a cell that supports PS and the network is in network oration mode I, UE shall:

- perform the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach".

12.4.3.4 ~~Combined p~~Periodic routing area updating / no cell available

12.4.3.4.1 Definition

12.4.3.4.2 Conformance requirement

If the UE is both IMSI attached for PS and non-PS services, and if the UE lost coverage of the registered PLMN and timer T3312 expires; if the UE returns to coverage in a cell that supports PS and the network is in network operation mode II, then the UE shall perform a periodic routing area update procedure and a periodic location update procedure.

Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.2.

12.4.3.4.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Idle updated on Cell A

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. PS radio contact is distorted before T3312 timeout. PS radio contact is established again (after T3312 timeout), and a periodic routing area updating procedure and a periodic location update procedure is performed immediately.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
3	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
4	->		ATTACH COMPLETE	
5-12			(void)	
13	SS			After 5 minutes, the signal strength is lowered until the UE have lost contact with the SS.
14	SS			After 2 minutes, the signal strength is increased until the UE have got contact with the SS.
15	UE			The UE immediately start the periodic RA updating procedure
16	->		ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
17	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature Routing area identity = RAI-1
~~18~~	~~->~~		~~RRC CONNECTION REQUEST~~	
~~19~~	~~<-~~		~~RRC CONNECTION SETUP~~	
~~20~~	~~->~~		~~RRC CONNECTION SETUP COMPLETE~~	
~~21~~	~~->~~		~~LOCATION UPDATING REQ~~	~~Location updating type = Periodic LA updating.~~
~~22~~	~~<-~~		~~LOCATION UPDATING ACC~~	
~~23~~	~~<-~~		~~RRC CONNECTION RELEASE~~	~~After sending of this message, the SS waits for disconnection of the CS signalling link.~~
~~24~~	~~->~~		~~RRC CONNECTION RELEASE COMPLETE~~	
~~25~~18	UE			The UE is switched off or power is removed (see ICS).
~~26~~19	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

~~None.~~

RRC System information block type 1

Information element	Comment Value
T3212 (Periodical Location updating)	Infinity

12.4.3.4.5 Test requirements

At step2, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the combined PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

At step16, ~~When~~ when the UE is both IMSI attached for PS and non-PS service , and if the UE lost coverage of the reiterated PLMN and the timer T3312 expires, if the UE returns to coverage in a cell in the same RA that supports PS and that indicates that the network is in network operation mode II, UE shall:

- perform the periodic routing area updating procedure indicating "Periodic updating".

~~- perform the periodic location updating procedure.~~

12.5 P-TMSI reallocation

12.5.1 Definition

12.5.2 Conformance requirement

1) A User Equipment shall acknowledge a new P-TMSI when explicitly allocated.
2) The P-TMSI shall be updated on the USIM when the User Equipment is correctly deactivated in accordance with the manufacturer's instructions.
3) A User Equipment shall use the given P-TMSI in further communication with the network.

Reference

3GPP TS 24.008 clause 4.7.6.

12.5.3 Test purpose

To verify that the UE is able to receive and acknowledge a new P-TMSI by means of an explicit P-TMSI reallocation procedure.

To verify that the UE has stored the P-TMSI in a non-volatile memory.

The implicit reallocation procedure is tested in the attach procedure.

12.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No (only if mode A not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

An explicit P-TMSI reallocation procedure is performed (P-TMSI reallocation command sent from the SS and acknowledged from the UE by P-TMSI reallocation complete). The UE is PS detached and switched off. Its power supply is interrupted for 10 seconds. The power supply is resumed and then the UE is switched on. A PS attach procedure is performed with the given P-TMSI as identity.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS). If UE operation mode A not supported set the UE in operation mode C.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
7	->		P-TMSI REALLOCATION COMPLETE	
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
10	UE			Ensure the power is removed from the UE for at least 10 seconds
11	UE			The UE is powered up or switched on and initiates an attach (see ICS).
12	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-3 signature Routing area identity = RAI-1
14	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
15	->		RRC CONNECTION REQUEST	
16	<-		RRC CONNECTION SETUP	
17	->		RRC CONNECTION SETUP COMPLETE	
18	->		SERVICE REQUEST	service type = "paging response"
19	<-		RRC CONNECTION RELEASE	
20	->		RRC CONNECTION RELEASE COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.5.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with the information elements specified in the above Expected Sequence ~~when UE is powered up or switched on~~.

~~After completing the PS attach procedure, and when UE receive of the P-TMSI REALLOCATION COMMAND message, UE shall:~~

- ~~store the allocated Routing Area Identifier(RAI) and the allocated P-TMSI.~~

At step7, when the UE receives P-TMSI REALLOCATION COMMAND message from SS, UE shall:

- acknowledge ~~a~~ the new P-TMSI by sending P-TMSI REALLOCATION COMPLETE message.

At step12, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step18, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

~~- send the P-TMSI and a P-TMSI REALLOCATION COMPLETE message to SS.~~

~~- update P-TMSI on the USIM when UE is correctly deactivated in accordance with the manufacturer's instructions.~~

~~- use the given P-TMSI in further communication with SS.~~

12.6 PS authentication and ciphering

12.6.1 Test of authentication

The purpose of this procedure is to verify the user identity. A correct response is essential to guarantee the establishment of the connection. If not, the connection will drop.

12.6.1.1 Authentication accepted

12.6.1.1.1 Definition

12.6.1.1.2 Conformance requirement

A User Equipment shall correctly respond in an authentication and ciphering procedure by sending a response with the RES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

Reference

3GPP TS 24.008 clause 4.7.7.

12.6.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the authentication and ciphering procedure.

12.6.1.1.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

The SS checks the value RES sent by the UE in the AUTHENTICATION AND CIPHERING RESPONSE message.

The UE initiates a routing area updating procedure and the SS checks the value of the PS Ciphering Key Sequence Number sent by the UE in the ROUTING AREA REQUEST message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 17.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
6	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
7		SS		The SS checks the RES value.
8	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
10		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
11	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
12		SS		The value of PS-CKSN is checked
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
17		SS		Reset the RF level of cell A to default state. Deactivate cell B.
18	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 16.

Specific message contents

None.

12.6.1.1.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered on or switched on~~.

At step6, ~~When~~ when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message form SS, UE shall:

- ~~—~~send the AUTHENTICATION AND CIPHERING RESPONSE message with the RES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

At step11, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- perform routing area updating procedure.

12.6.1.2 Authentication rejected by the network

12.6.1.2.1 Definition

12.6.1.2.2 Conformance requirement

1) After reception of an Authentication Reject message the UE shall:

   1.1 not perform normal routing area updating

   1.2 not perform periodic routing area updating

   1.3 not perform PS detach if switched off

2) The UE shall delete the stored RAI, PS-CKSN P-TMSI and P-TMSI signature. USIM shall be considered invalid until power is switched off or USIM is removed.

Reference

3GPP TS 24.008 clauses 4.7.7.

12.6.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the authentication and ciphering procedure.

12.6.1.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS rejects the authentication and ciphering procedure.

The SS checks that the UE does not perform normal routing area updating, does not perform periodic routing area updating and does not perform PS detach if switched off.

T3312; set to 10 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 14.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
6	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
7	<-		AUTHENTICATION AND CIPHERING REJECT	
8	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for PS services.
9	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell B.
10		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
11	UE			No ROUTING AREA UPDATING REQUEST sent to the SS (SS waits 30 seconds).
12	UE			No periodic ROUTING AREA UPDATING REQUEST sent to the SS (SS waits ~~T3310~~ Periodic Routing Area Updating timer (T3312) after the Authentication and Ciphering Reject message.)
13	UE			The UE is switched off (see ICS).
14		SS		No DETACH REQUEST sent to the SS (SS waits 30 seconds).
15	UE			The UE is set in UE operation mode A (see ICS). Restore cell A and B according to initial conditions. ~~and t~~The test is repeated from step ~~1~~ 3 to step ~~13~~14.

Specific message contents

None.

12.6.1.2.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered on or switched on~~.

At step9, ~~After~~ when the UE receives the AUTHENTICATION AND CIPHERING REJECT message, UE shall:

- not respond paging message for PS domain.

At step11, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- ~~—~~not perform normal routing area updating. ~~when the RF level of the attached cell is lower than the RF level of the new cell~~.

At step12, when the timer T3312 expires, UE shall:

- ~~—~~not perform a periodic routing area updating~~. when the timer T3312 expires.~~

At step14, when the UE is switched off, UE shall:

- not perform PS detach ~~when UE is switched off~~procedure.

~~— delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.~~

~~— consider the USIM as invalid until power is switched off or USIM is removed.~~

12.6.1.3 Authentication rejected by the UE

12.6.1.3.1 GMM cause 'MAC failure'

12.6.1.3.1.1 Definition

12.6.1.3.1.2 Conformance requirement

If the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid, the UE shall send AUTHENTICATION AND CIPHERING FAILURE message with the reject cause 'MAC failure' to the System Simulator.

Reference

3GPP TS 24.008 clause 4.7.7.

12.6.1.3.1.3 Test purpose

To test the behaviors of the UE, when the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid.

12.6.1.3.1.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

The MAC (Message Authentication Code) code, which is included in AUTHENTICATION AND CIPHERING REQUEST, is invalid value.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message with reject cause 'MAC failure' to the SS and starts timer T3214.

The SS initiates an identification procedure, upon receipt of a failure message with reject cause 'MAC failure'.

After the identification procedure is complete, the SS re-initiates an authentication and ciphering procedure.

T3360; set to 6 seconds.

T3318; set to 5 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 25.
3	UE			
4				The following messages are sent and shall be received on cell A.
5	UE			The UE is powered up or switched on and initiates an attach (see ICS).
6	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
7	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Invalid Message Authentication Code (MAC).
9	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
10	<-		IDENTITY REQUEST	Identity type = IMSI
11	->		IDENTITY RESPONSE	Mobile identity = IMSI
		SS		
13	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Including PS-CSKN-1
14	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
15		SS		The SS checks the RES value.
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
17	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
18		SS		Cell B is activated and cell A is deactivated.
19	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
20		SS		The value of PS-CKSN is checked
21	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->		ROUTING AREA UPDATING COMPLETE	
23	UE			The UE is switched off or power is removed (see ICS).
24	->		DETACH REQUEST	Message is not sent if power is removed. Detach type = 'power switched off, PS detach'
25	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 24.

Specific message contents

None.

12.6.1.3.1.5 Test requirements

At step6, when the UE is powered on or switched on, UE shall:

- ~~—~~initiate ~~a~~ the PS attach procedure with information element specified in the above Expected Sequence ~~when UE is powered on or switched on~~.

At step9, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST with Invalid Message Authentication Code, UE shall:

- send ~~an~~ the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS

~~— start timer T3318.~~

At step11, ~~After~~ when the UE receives the IDENTITY REQUEST message with Identity type = IMSI from SS, UE shall:

- send the IDENTITY RESPONSE message with Mobile identity = IMSI to SS.

At step14, ~~After~~ when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message (containing a valid MAC) from SS, UE shall:

~~— stop timer T3318, if running~~

- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS.

12.6.1.3.2 GMM cause 'Synch failure'

12.6.1.3.2.1 Definition

12.6.1.3.2.2 Conformance requirement

If the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range, the UE shall send AUTHENTICATION AND CIPHERING FAILURE message with the reject cause 'Synch failure' to the System Simulator.

Reference

3GPP TS 24.008 clause 4.7.7.

12.6.1.3.2.3 Test purpose

To test the behaviors of the UE, when the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range.

12.6.1.3.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

UE sends AUTHENTICATION AND CIPHERING FAILURE message with reject cause 'synch failure' to the SS and starts timer T3214.

SS re-initiates an authentication and ciphering procedure.

T3360; set to 6 seconds.

T3320; set to 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 21.
				The following messages are sent and shall be received on cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. SQN is out of range.
6		SS		The SS starts the timer T3360
7	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause = 'Synch failure' AUTS parameter
8		SS		set new authentication vectors. (re-synchronisation)
9	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Including PS-CKSN-1
10	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
11		SS		The SS checks the RES value.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
14		SS		Cell B is activated, cell A is deactivated.
15	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
16		SS		The value of PS-CKSN is checked
17	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2

Step	Direction		Message	Comments
	UE	SS		
18	->		ROUTING AREA UPDATING COMPLETE	
19	UE			The UE is switched off or power is removed (see ICS).
20	->		DETACH REQUEST	Message is not sent if power is removed. Detach type = 'power switched off, PS detach'
21	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 20.

Specific message contents

None.

12.6.1.3.2.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information element specified in the above Expected Sequence ~~when UE is powered on or switched on~~.

At step7, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message(SQN is out of range.), UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'synch failure' to the SS

~~- start timer T3320.~~

At step10, ~~After~~ when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message from SS, UE shall:

~~- stop timer T3320, if running.~~

- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS.

At step15, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- perform routing area updating procedure.

12.6.1.3.3 Authentication rejected by the UE / fraudulent network

12.6.1.3.3.1 Definition

12.6.1.3.3.2 Conformance requirement

It can be assumed that the source of the authentication challenge is not genuine (authentication not accepted by the UE) if any of the following occur:

- After sending the AUTHENTICATION & CIPHERING FAILURE message with GMM cause 'MAC failure' the timer T3318 expires;

- Upon receipt of the second AUTHENTICATION & CIPHERING REQUEST message from the network while the T3318 is running and the MAC value cannot be resolved.

If the UE deems that the network has failed in the authentication check, then the UE shall treat the cell where the AUTHENTICATION & CIPERHERING REQUEST message was received as barred, until System Information is refreshed.

Reference

3GPP TS 24.008 clause 4.7.7.6.1.

12.6.1.3.3.3 Test purpose

To test UE treating a cell as barred:

1. when the network sends the second AUTHENTICATION & CIPHERING REQUEST message with invalid MAC code during the timer T3318 is running.

2. when the timer T3318 has expired.

12.6.1.3.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1(RAI-1), cell B in MCC1/MNC1/LAC1/RAC2(RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

Two cells are configured. Cell A transmits with higher power so that the UE attempts an attach procedure to cell A.

During the attach procedure, the SS initiates an authentication and ciphering procedure but it sends an incorrect Message Authentication Code (MAC) value in its AUTHENTICATION AND CIPHERING REQUEST message.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message to the SS indicating authentication failure.

The SS repeats a second time the authentication procedure, which fails again. Next, the UE shall attempt to attach to cell B, which again fails. In this case T3318 expires after the second attempt.

The UE shall treat now both cells as barred and shall not attempt to access the network, even if the user triggers the UE to perform an attach procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS is configures two cells A and B. Cell A transmits with higher power levels, so that the UE selects cell A for attaching. The following messages are sent and shall be received on cell A.
2		UE		The UE is powered up or switched on and initiates an attach procedure.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
4	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
5	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
6	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
7	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
8		SS		SS verifies that the UE does not attempt to access the network for 30s.
9		SS		The SS deactivates cell A and activates cell B.
				UE shall attempt an attach on cell B. The following messages are sent and shall be received on cell B.
10		UE		The UE initiates an attach by MMI or AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
12	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
13	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
14		SS		SS waits T3318 (20s)
15		SS		SS verifies that the UE does not attempt to access the network for 30s.
16		UE		The UE initiates an attach by MMI or AT command.
17		SS		SS verifies that the UE does not attempt to access the network for 30s.

Specific message contents

None.

12.6.1.3.3.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered on or switched on~~.

At step5, ~~After~~ when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send ~~an~~ the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step7, ~~After~~ when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC) from the network during a timer T3318 is running, UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step11, ~~After~~ when the activated cell is changed from cell A to cell B, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence.

At step13, when ~~After~~ the UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step17, ~~After~~ when ~~a~~ the timer T3318 is expired, UE shall:

- not attempt to access the network.

12.6.2 Void

12.7 Identification procedure

The purpose of this procedure is to check that the UE gives its identity as requested by the network. If this procedure does not work, it will not be possible for the network to rely on the identity claimed by the UE.

12.7.1 General Identification

12.7.1.1 Definition

12.7.1.2 Conformance requirement

1) When requested by the network the User Equipment shall send its IMSI.

2) When requested by the network the User Equipment shall send its IMEI as stored in the Mobile Equipment.

3) When requested by the network the User Equipment shall send its IMEISV as stored in the Mobile Equipment.

Reference

3GPP TS 24.008 clauses 4.7.8

12.7.1.3 Test purpose

To verify that the UE sends identity information as requested by the system. The following identities can be requested: IMSI, IMEI and IMEISV.

12.7.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS requests identity information from the UE:

- IMSI
- IMEI
- IMEISV

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 14.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		->	ATTACH COMPLETE	
6		<-	IDENTITY REQUEST	Identity type = IMSI
7		->	IDENTITY RESPONSE	Mobile identity = IMSI
8		<-	IDENTITY REQUEST	Identity type = IMEI
9		->	IDENTITY RESPONSE	Mobile identity = IMEI
10		<-	IDENTITY REQUEST	Identity type = IMEISV
11		->	IDENTITY RESPONSE	Mobile identity = IMEISV
12	UE			The UE is switched off or power is removed (see ICS).
13		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
14	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 13.

Specific message contents

None.

12.7.1.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate ~~a~~ the PS attach procedure with information elements specified in the above Expected Sequence ~~when UE is powered on or switched on~~.

At step7, ~~When~~ when the SS requests an IMSI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMSI.

At step9, ~~When~~ when the SS requests an IMEI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEI.

At step11, ~~When~~ when the SS requests an IMEISV with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEISV.

12.8 GMM READY timer handling

The READY timer is not applicable for UMTS.

12.8.1 Definition

12.8.2 Conformance requirement

If a READY timer value is received by an UE capable of both UMTS and GSM in the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, then the received value shall be stored by the UE in order to be used at an intersystem change from UMTS to GSM.

Reference

3GPP TS 24.008 clause 4.7.2.1

12.8.3 Test purpose

To verify the functionality of the READY timer.

12.8.4 Method of test

12.8.4.1 Test procedure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

An attach is performed.

T3314; set to 60 seconds

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS). If UE operation mode A not supported set the UE in operation mode C. The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3314 = 60 seconds
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off or power is removed (see ICS).
7	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.8.5 Test requirements

At step4, ~~When~~ when the UE receives the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, UE shall:

- store the received READY timer value.

12.9 Service Request procedure (UMTS Only)

12.9.1 Service Request Initiated by UE Procedure

12.9.1.1 Definition

12.9.1.2 Conformance requirement

UE shall send the Service Request message to the network in order to establish the PS signalling connection for the upper layer signalling or for the resource reservation for active PDP context(s).

Reference

TS 24.008 clauses 4.7.13

TS 23.060 clauses 6.12.1

12.9.1.3 Test purpose

To test the behaviour of the UE if the UE initiates the CM layer service (e.g. SM or SMS) procedure.

12.9.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE in PMM-IDLE state sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receives the SERVICE REQUEST message, the SS performs authentication procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C(see ICS). If UE operation mode C not supported, goto step 12.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling",
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 11.

Specific message contents

None.

12.9.1.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step7, ~~When~~ when the UE has any signalling message (e.g. for SM or SMS) that requires security protection, the UE shall:

- send the SERVICE REQUEST message with service type indicated "signalling".

12.9.2 Service Request Initiated by Network Procedure

12.9.2.1 Definition

12.9.2.2 Conformance requirement

When the UE receives a paging request for PS domain from the network in PMM-IDLE mode, the UE shall send the SERVICE REQUEST message to the network.

Reference

TS 24.008 clauses 4.7.13

TS 23.060 clauses 6.12.2

12.9.2.3 Test purpose

To test the behavior of the UE if the UE receives the paging request for PS domain service from the network.

12.9.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE is in PMM-IDLE state. The SS pages the UE by sending a Paging message to the UE.

b) The UE sends a SERVICE REQUEST message to the SS. Service Type specifies Paging Response. The Service Request is carried over the radio in an RRC Direct Transfer message.

c) After the SS receives the SERVICE REQUEST message from the UE, SS initiates an authentication procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C(see ICS). If UE operation mode C not supported, goto step 12.
2	UE			The UE is powered up or switched in and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	
7	->		SERVICE REQUEST	Service type = "Paging response"
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 11.

Specific message contents

None.

12.9.2.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step6, ~~When~~ when the UE receives a paging request for PS domain from the network in PMM-IDLE mode, the UE shall:

- send the SERVICE REQUEST message with service type indicated "paging response".

12.9.3 Service Request / rejected / Illegal MS

12.9.31 Definition

12.9.3.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "Illegal MS", the UE shall:

1) set the GPRS update status to GU3 ROAMING NOT ALLOWED and enter state GMM DEREGISTRATED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) consider the USIM as invalid for PS service until switched off or the USIM is removed.

Reference

TS 24.008 clauses 4.7.13.4

12.9.3.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "Illegal MS".

12.9.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature, RAI-1 and IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #3(Illegal MS).

c) After the UE receives the SERVICE REJECT message with the cause value #3(Illegal MS), the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.

d) The SS checks that the UE does not initiate an upper-layer signalling until the power of the UE is switched off.

e) The SS checks that the UE does not initiate an upper-layer signalling until the USIM is removed from the UE.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "Illegal MS"
10	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11	SS			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds)
12	UE			The UE is switched off.
13	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
14	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
17	->		ATTACH COMPLETE	
18	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19	->		SERVICE REQUEST	Service type = "signalling"
20	<-		SERVICE REJECT	Reject cause = "Illegal MS"
21	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
22	SS			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds)
23	UE			USIM is removed.
24	->		DETACH REQUEST	
	UE			USIM is inserted.
25	UE			The UE initiates a PS attach, by MMI or by AT command.
26	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
27	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1

Step	Direction		Message	Comments
	UE	SS		
28	->		ATTACH COMPLETE	
29	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
30	->		SERVICE REQUEST	Service type = "signalling"

Specific message contents

None.

12.9.3.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step11, ~~When~~ when the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- not attempt to access the network.

At step15, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step22, when the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- not attempt to access the network.

At step26, when the USIM is replaced, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step30, UE shall:

- initiate the service request procedure.

~~- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.~~

~~- consider the USIM as invalid for PS services until the UE is switched off.~~

~~- consider the USIM as invalid for PS service until USIM is removed.~~

12.9.4 Service Request / rejected / PS services not allowed

12.9.41 Definition

12.9.4.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "PS services not allowed", the UE shall:

1) set the GPRS update state to GU3 ROAMING NOT ALLOWED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) consider the USIM as invalid for PS service until the UE is switched off or until the USIM is removed.

Reference

TS 24.008 clauses 4.7.13.4

12.9.4.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "PS service not allowed".

12.9.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #7(PS services not allowed).

c) After the UE receives the SERVICE REJECT message with the cause value #7(PS services not allowed), the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.

d) The SS checks that the UE does not initiate an upper-layer signalling until the UE is switched off.

e) The SS checks that the UE does not initiate an upper-layer signalling until the USIM is removed from the UE.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "PS services not allowed"
10	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30seconds)
12	UE			The UE is switched off.
13	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
14	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
17	->		ATTACH COMPLETE	
18	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19	->		SERVICE REQUEST	Service type = "signalling"
20	<-		SERVICE REJECT	Reject cause = "PS services not allowed"
21	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
22	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30seconds)
23	UE			USIM is removed.
24	->		DETACH REQUEST	
	UE			USIM is inserted.
25	UE			The UE initiates a PS attach, by MMI or by AT command.
26	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
27	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
28	->		ATTACH COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
29	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
30	->		SERVICE REQUEST	Service type = "signalling"

Specific message contents

12.9.4.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step11, ~~When~~ when the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- not attempt to access the network.

At step15, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step22, when the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- not attempt to access the network.

At step26, when the USIM is replaced, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step30, UE shall:

- initiate the service request procedure.

~~- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number~~

~~- consider the USIM as invalid for PS services until the UE is switched off.~~

~~- consider the USIM as invalid for PS services until USIM is removed.~~

12.9.5 Service Request / rejected / MS identity cannot be derived by the network

12.9.5.1 Definition

12.9.5.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "MS identity cannot be derived by the network", the UE shall:

1) set the GPRS update states to GU2 NOT UPDATED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) initiate the PS attach procedure automatically.

Reference

TS 24.008 clauses 4.7.13.4

12.9.5.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "MS identity cannot be derived by the network".

12.9.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #9 (MS identity cannot be derived by the network).

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "MS identity cannot be derived by the network"
10	UE			The UE automatically initiates the PS attach procedure.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
13	->		ATTACH COMPLETE	
14	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
15	->		SERVICE REQUEST	Service type = "signalling"
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.5.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step11, ~~When~~ when the UE receives the SERVICE REJECT message with cause "MS identity cannot be derived by the network" UE shall:

~~- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.~~

~~After the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number, UE shall:~~

- initiate PS attach procedure automatically.

12.9.6 Service Request / rejected / PLMN not allowed

12.9.6.1 Definition

12.9.6.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "PLMN not allowed", the UE shall:

1) delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.
2) set the GPRS update status to GU3 ROAMING NOT ALLOWED.
3) store the LAI or the PLMN identity in the appropriate forbidden list.

Reference

TS 24.008 clauses 4.7.13.4

12.9.6.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "PLMN not allowed".

12.9.6.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 cell B in MCC2/MNC1/LAC1/RAC1.
All two cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #11 (PLMN not allowed).

c) The SS checks that the UE does not initiate an upper-layer signalling until the UE is switched off.

d) The SS checks that the UE does not answer a Page from the SS until the power of the UE is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "PLMN not allowed"
10	UE			The UE stores the LAI or the PLMN identity in the "forbidden PLMN list".
11	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
12	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30second)
13	<-		PAGING TYPE1	Paging order is for PS service
14	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages shall be sent and shall be received on cell B.
15	SS			The SS deactivates cell A and activates cell B.
16	UE			Cell D is preferred by the UE.
17	UE			The UE initiates an attach automatically, by MMI or by AT command.
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Attach result = 'PS only attached'
20	->		ATTACH COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	

Specific message contents

None.

12.9.6.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step12, ~~When~~ when the UE receives the SERVICE REJECT message with cause "PLMN not allowed", UE shall:

~~- delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.~~

~~- store the LAI or the PLMN identity in the appropriate forbidden list, i.e. in the "forbidden PLMN list".~~

~~After the UE stores the LAI or the PLMN identity in the appropriate forbidden list, UE shall:~~

~~-~~ not perform a PS attach procedure in the same PLMN.

At step13, when the UE receives the paging message for PS domain UE shall:

- not respond to the paging message for PS domain.

At step18, UE shall:

- perform PS attach procedure.

12.9.7a Service Request / rejected / No PDP context activated

12.9.7a.1 Definition

12.9.7a.2 Conformance requirement

If the network rejects a service request procedure with the cause "No PDP context activated", the UE shall:

- deactivate all active PDP contexts.

After the UE deactivates all active PDP contexts, UE shall:

- perform PDP context(s) activation.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7a.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "No PDP context activated".

12.9.7a.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #40 (No PDP context activated).

c) After the UE receives the SERVICE REJECT message, the UE shall send the ACTIVATE PDP CONTEXT REQUEST message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1				The UE is set in UE operation mode C (see ICS).
2				The SS is set in network operation mode II and activates cell A.
3				The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	
5	<-		ATTACH ACCEPT	
6	->		ATTACH COMPLETE	
7	UE			The UE initiates a PS call, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "No PDP context activated"
10	UE			The UE shall deactivate locally all active PDP contexts.
11	UE			The UE initiates a PS call, by MMI or by AT command.
11a	->		SERVICE REQUEST	Service type = "signalling"
11b	SS			SS initiates a security procedure by sending SECURITY MODE COMMAND message.
12	->		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
13	<-		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
14	UE			The UE initiates Deactivate PDP Context request, by MMI or by AT command.
15	->		DEACTIVE PDP CONTEXT REQUEST	Deactivate PDP context deactivation
16	<-		DEACTIVE PDP CONTEXT ACCEPT	Accept PDP context deactivation
17	UE			The UE is switched off or power is removed (see ICS).
18	UE			The UE initiates Detach request, by MMI or by AT command.
19	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.7a.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure.

When the UE receives a SERVICE REJECT message with the cause "No PDP context activated", UE shall:

- —deactivate all active PDP context.

At step11a, UE shall:

- initiates a Service request procedure.

At step12, UE shall:

- perform PDP context(s) activation.

12.9.7b Service Request / rejected / No Suitable Cells In Location Area

12.9.7b.1 Definition

12.9.7b.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "No Suitable Cells In Location Area", the UE shall:

1) delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.
2) set the GPRS update status to GU3 ROAMING NOT ALLOWED.
3) store the LAI or the PLMN identity in the list of 'forbidden location areas for roaming'.
4) search for a suitable cell in a different location area on the same PLMN.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "No Suitable Cells In Location Area".

12.9.7b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode II.

User Equipment:

The UE has valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a Service request with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
	SS			The SS activates three cells simultaneously. The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	SS			The SS initiates the RRC connection release.
7	UE			The UE initiates a PS call, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "No Suitable Cells In Location Area" The following message are sent and shall be received on cell B.
10	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11	<-		ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Attach result = 'PS only attached'
12	->		ATTACH COMPLETE	
13	UE			The UE is switched off or power is removed (see ICS).
14	->		DETACH REQUEST	

Specific message contents

None.

12.9.7b.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

~~When the UE receives the SERVICE REJECT message with the cause "No Suitable Cells In Location Area", UE shall:~~

- ~~delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.~~

- ~~store the LAI or the PLMN identity in the appropriate forbidden list, i.e. in the " forbidden location areas for roaming ".~~

- ~~search for a suitable cell in a different location area on the same PLMN.~~

At step10, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.9.8 Service Request / Abnormal cases / Access barred due to access class control

12.9.8.1 Definition

12.9.8.2 Conformance requirement

If the UE access class X is barred, the UE shall:

1) not start Service Request procedure.
2) stay in the current serving cell.
3) applie normal cell reselection process.

If the UE access class X is granted or serving cell is changed, the UE shall:

1) start Service Request procedure.

Reference

TS 24.008 clauses 4.7.13.5.

12.9.8.3 Test purpose

To test the behavior of the UE in case of access class control (access is granted).

12.9.8.4 Method of test

Initial condition

A random access class X (0-15) is selected. The USIM is programmed with this access class X.

Initially, an access class X is barred.

System Simulator:

One cell operating in network operation mode II.

Access class x barred.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS initiates access class X barred. A service request procedure is not performed.

The SS initiates that access class X is not barred. A service request procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is set up Access class x. The access class x is barred in cell A. The UE is powered up or switched on and attempt to initiate an ATTACH.
2	UE			No SERVICE REQUEST sent to SS, as access class X is barred. (SS waits 30 seconds)
3	SS			The access class x is not barred anymore.
4	UE			The UE automatically initiates an attach.
5	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
7	->		ATTACH COMPLETE	
8	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
9	->		SERVICE REQUEST	Service Type = "signalling".
10	<-		AUTHENTICATION AND CIPHERING REQUEST	
11	->		AUTHENTICATION AND CIPHERING RESPONSE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.8.5 Test requirements

At step2, when the UE access class x is barred, UE shall:

- not perform Service Request procedure.

At step5, when the UE access class x is barred, UE shall:

- initiate the PS attach procedure.

~~UE shall perform the following actions depending on the UE access class X.~~

~~Case 1) The UE access class X is barred,~~

~~UE shall:~~

- ~~not start Service Request procedure.~~
- ~~stay in the current serving cell.~~
- ~~apply normal cell reselection process.~~

~~Case 2) The UE access class X is granted or serving cell is changed,~~

At step9, UE shall:

- perform~~start~~ Service Request procedure.

12.9.9 Service Request / Abnormal cases / Routing area update procedure is triggered

12.9.9.1 Definition

12.9.9.2 Conformance requirement

If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, the UE shall:

- abort Service request procedure.
- start routing area update procedure immediately.

Reference

TS 24.008 clause 4.7.13.5

12.9.9.3 Test purpose

To test the behavior of the UE in case of collision between Routing area update procedure and Service request procedure.

12.9.9.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) The UE initiates the routing area update procedure.

c) The UE aborts Service request procedure and performs Routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling"
8	SS			Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
9	UE			The UE aborts Service request procedure.
				The following message are sent and shall be received on cell B.
10	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature
11	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
12	->		ROUTING AREA UPDATING COMPLETE	
13	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
14	->		SERVICE REQUEST	Service type = "signalling"
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.9.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step7, UE shall:

- perform the service request procedure.

At step10, ~~When~~ when the routing area update procedure is initiated before the security mode control procedure is completed, UE shall;

- abort a Service request procedure

~~After the UE aborts the Service request procedure, UE shall;~~

- perform the routing area updating procedure.

At step14, ~~After~~ after the UE completes the routing area updating procedure, UE shall;

- restart the Service Request procedure.

12.9.10 Service Request / Abnormal cases / Power off

12.9.10.1 Definition

12.9.10.2 Conformance requirement

When the UE in GMM-SERVICE-REQUEST-INITIATED state is switched off, UE shall:

- perform PS detach procedure.

Reference

TS 24.008 clauses 4.7.13.5

12.9.10.3 Test purpose

To test the behavior of the UE in case of collision between Service request procedure and "powered off".

12.9.10.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

The UE is switched off after initiating a Service request procedure. A PS detach is automatically performed by the UE before power is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling"
8	UE			The UE is powered off and initiates a PS detach (with power off) by MMI or by AT command.
9	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.10.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step7, UE shall:

- perform the service request procedure

At step9, ~~When~~ when the UE is switched off during the Service Request procedure, UE shall;

- abort the Service request procedure.

~~After the UE aborts the Service request procedure, UE shall;~~

- perform the PS detach procedure.

12.9.11 Service Request / Abnormal cases / Service request procedure collision

12.9.11.1 Definition

12.9.11.2 Conformance requirement

When the UE in GMM-SERVICE-REQUEST-INITIATED state receives a DETACH REQUEST message from the network, UE shall:

- perform the PS detach procedure.
- abort Service request procedure.

Reference

TS 24.008 clauses 4.7.13.5

12.9.11.3 Test purpose

To test the behaviour of the UE in case of collision between Service request procedure and PS detach procedure.

12.9.11.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) The SS sends a DETACH REQUEST message to the UE, before the security procedure is not started.

c) After the UE receives the DETACH REQUEST message, the UE aborts the Service request procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	SS			The SS does not respond to SERVICE REQUEST message.
10	<-		DETACH REQUEST	GMM cause = "reattach request"
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
12	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.11.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step11, ~~When~~ when the UE receives a DETACH REQUEST message from the network before the Service request procedure completes, UE shall;

- abort the Service request procedure.

~~After the UE aborts the Service request procedure, UE shall;~~

- perform the PS detach procedure.

3GPP TSG-T1 Meeting #13 ***T1-010417***
Cancun, Mexico, 29-30 November 2001

3GPP TSG-T1/SIG Meeting #20 ***T1S-010262***
Cancun, Mexico, 26-28 November 2001

CR-Form-v4

CHANGE REQUEST

⌘ **TS 34.123-1 CR 124** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Update of interoperability radio bearer test cases for FDD.
Source:	⌘	Ericsson
Work item code:	⌘	TEI
Date:	⌘	2001-11-26
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘

1. Generic test procedure in clause 14.1.1:
   - The generic test procedure need to be expanded for UEs only supporting PS (current generic test procedure assumes all UEs support CS).
2. Clarification that TM RLC segmentation shall be configured for Conversational /Unknown-radio-bearer test cases.
3. In some of the Sub-tests of radio bearer test cases, list of TFCIs mentioned in Restricted UL TFCIs column is not matching with the Uplink TFCI under test and TFCI supporting Uplink TFCI under test. (comments from MCC Task 160 / Motorola)
4. Currently there are some radio bearer test cases which have RLC configured for transparent mode and for which the RLC SDU size would need transmission over more than one TTI. This is inconsistent with the RLC core specification TS 25.322. (Reference: T1S-010261, issue 1)
5. Currently there are some radio bearer test cases which have RLC configured for acknowledged mode and for which the test data size is set to a multiple of the actual transport block size. To achieve the test prupose the test data size should instead be set to a multiple of the payload size reduced by the size of the required length indicators. (Reference: T1S-010261, issue 2)

Summary of change: ⌘

1. Changes to generic test procedure in clause 4.1.1 to cover both CS and PS case.
2. Added RLC Info parameter ‘Segmentation indication = TRUE’ to the following test cases:

		14.2.12, 14.2.13.1, 14.2.13.2, 14.2.14.2, 14.2.49.1, 14.2.49.2, 14.2.50.1, 14.2.50.2, 14.2.51.1, 14.2.51.2, 14.2.52.1, 14.2.52.2, 14.2.53.1 and 14.2.53.2. 3. Corrected column “Restricted Uplink TFCIs” in the Sub-test tables of following test cases: 14.2.40, 14.2.41, 14.2.42.1, 14.2.42.2, 14.2.43.1,14.2.43.2, 14.2.51.1, 14.2.51.2, 14.2.52.1, 14.2.52.2, 14.2.53.1, 14.2.53.2, 14.2.54 and 14.2.55. 4. Limited the UL RLC SDU size to 576 bits for the following test cases (to be able to transmit the UL RLC SDU within one TTI): 14.2.18, 14.2.20, 14.2.22, 14.2.46, 14.2.47, 14.2.48, 14.2.54 and 14.2.55. 5. For the interactive background radio bearer test cases the test data size and RLC SDU size have been changed to be a multiple of the actual payload size. The test data size and RLC SDU size have also been reduced with the size of the required length indicator. Following test cases are affected: 14.2.23 to 14.2.44 and 14.2.51 to 14.2.55.
Consequences if not approved:	⌘	Incorrect radio bearer test cases

Clauses affected:	⌘	14			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘		
Other comments:	⌘	R99 and REL-4			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

14 Interoperability Radio Bearer Tests

14.1 General information for interoperability radio bearer tests

The purpose of the interoperability radio bearer test cases are to ensure interoperability of UE's in different regions and networks. For this purpose representative radio bearer configurations that will be used in real network implementations have been defined in TS 34.108 [9], clause 6.10.

The applicability of radio bearer tests is dependent on the UE uplink and downlink radio access capabilities and UE support tele- and bearer-services. See TS 34.123-2, annex B for applicability of the specific test cases.

14.1.1 Generic radio bearer test procedure

Initial conditions

UE in idle mode

Test procedure

a) The SS setup the reference radio bearer configuration as specified in TS 34.108, clause 6.10 for the actual radio bearer test.

b) The SS limits the UE allowed uplink transport format combinations according to the "Restricted UL TFCIs", as specified for the sub-test of the actual radio bearer test, using the RRC transport format combination control procedure. See note 1.

c) The SS closes the test loop using UE test loop mode 1 and setting the UL RLC SDU size parameter, for all radio bearers under test, according to the "UL RLC SDU size" value as specified for the sub-test of the actual radio bearer test.

d) The SS transmits, for all radio bearers under test, ~~an~~ one or more RLC SDUs having the size equal to the "Test data size" as specified for the sub-test of the actual radio bearer test. See note 2~~1~~.

e) The SS checks that, for all radio bearers under test, the content of the received RLC SDU has the correct content and is received having the correct transport format. See TS 34.109 [10] clause 5.3.2.6.2 for details regarding the UE loopback of RLC SDUs.

f) The SS opens the UE test loop.

g) Steps b) to f) are repeated for all sub-tests

h) The SS may optionally release the radio bearer.

i) The SS may optionally deactivate the radio bearer test mode.

NOTE 1: The restricted set of TFCIs shall contain all possible TFCI that could happen in a sub-test. The actual TTI of the different radio bearers and signaling radio bearers as well as the possible UE processing delays shall be taken into consideration.

NOTE 2: For the case when the reference radio bearer configuration under test uses RLC transperant mode in downlink and is not configured for segmented operation then the radio bearer test case shall use a DL RLC SDU size (defined by the "Test data size" parameter) equal to the DL RLC PDU size. ~~This is due to that the UE test loop function has no ability to perform reassembly of segmented DL RLC SDUs while the RLC is operated in transperent mode.~~ See [7] TS 25.322 for details regarding UE operation in RLC transperent mode.

Expected sequence

CS paging procedure

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING TYPE 1 (PCCH)	Paging (CS domain, TMSI)
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6	-->		PAGING RESPONSE (DCCH)	RR

PS paging procedure

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING TYPE 1 (PCCH)	Paging (PS domain, P-TMSI)
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6a	-->		SERVICE REQUEST (DCCH)	GMM
6b	<--		SECURITY MODE COMMAND	RRC see note 1
6c	-->		SECURITY MODE COMPLETE	RRC see note 1

Note 1 Step 6b and Step 6c are inserted in order to stop T3317 timer in the UE, which starts after transmitting SERVICE REQUEST message.

Step	Direction		Message	Comments
	UE	SS		
~~1~~	~~<--~~		~~SYSTEM INFORMATION (BCCH)~~	~~Broadcast~~
~~2~~	~~<--~~		~~PAGING (PCCH)~~	~~Paging~~
~~3~~	~~-->~~		~~RRC CONNECTION REQUEST (CCCH)~~	~~RRC~~
~~4~~	~~<--~~		~~RRC CONNECTION SETUP (CCCH)~~	~~RRC~~
~~5~~	~~-->~~		~~RRC CONNECTION SETUP COMPLETE (DCCH)~~	~~RRC~~
~~6~~	~~-->~~		~~PAGING RESPONSE (DCCH)~~	~~RR~~
1..6	<-- -->		Paging	Use the CS paging procedure for testing of CS and combined CS/PS reference radio bearer configurations. Use the PS paging procedure for testing of PS reference radio bearer configurations.
7	<--		ACTIVATE RB TEST MODE (DCCH)	TC
8	-->		ACTIVATE RB TEST MODE COMPLETE (DCCH)	TC
9	<--		RADIO BEARER SETUP (DCCH)	RRC
10	-->		RADIO BEARER SETUP COMPLETE (DCCH)	RRC
11	<--		TRANSPORT FORMAT COMBINATION CONTROL	RRC Transport format combinations is limited to "Restricted UL TFCIs", as specified for the sub-test
12	<--		CLOSE UE TEST LOOP	TC UE test mode 1 RLC SDU size is for every active radio bearer set to "UL RLC SDU size", as specified for the sub-test.
13	-->		CLOSE UE TEST LOOP COMPLETE (DCCH)	TC
14	<--		DOWNLINK RLC SDU	Send test data using the downlink transport format combination under test.
15	-->		UPLINK RLC SDU	
16	<--		OPEN UE TEST LOOP	TC
17	-->		OPEN UE TEST LOOP COMPLETE	TC
18			Repeat steps 11 to 17 for every sub-test.	
19			RB RELEASE	RRC Optional step
20	<--		DEACTIVATE RB TEST MODE	TC Optional step
21	-->		DEACTIVATE RB TEST MODE COMPLETE	TC Optional step

14.2 Combinations on DPCH

14.2.1 Stand-alone UL:1.7 DL:1.7 kbps SRBs for DCCH

Implicitly tested.

14.2.2 Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH

Implicitly tested.

14.2.3 Stand-alone UL:13.6 DL:13.6 kbps SRBs for DCCH

Implicitly tested.

14.2.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.4.1 Conformance requirement

The UE shall be able to establish the UTRAN requested radio bearers within the UE's signaled radio access capabilities.

The UE shall correctly transfer user data from peer to peer RLC entitities according to the requested radio bearer configuration.

Reference(s)

3GPP TS 25.331, clause 8.2.1

3GPP TS 25.2xx series (Physical Layer)

3GPP TS 25.321 (MAC)

3GPP TS 25.322 (RLC)

14.2.4.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.4.

14.2.4.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 103 bits RB7: 60 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 81 bits RB6: 103 bits RB7: 60 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.4.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
   - for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS

14.2.5 Conversational / speech / UL:10.2 DL:10.2 kbps / CS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.5.1 Conformance requirement

See clause 14.2.4.1.

14.2.5.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.5.

14.2.5.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x65(alt. 1x0)	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7,DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 99 bits RB7: 40 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 65 bits RB6: 99 bits RB7: 40 bits	RB5: 65 bits RB6: 99 bits RB7: 40 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.5.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).

- for sub-test 2: RB5/TF2 (1x65); RB6/TF1 (1x99); and RB7/TF1 (1x40).

3. At step 15 the UE shall return

   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.

   - for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.

14.2.6 Conversational / speech / UL:7.95 DL:7.95 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.6.1 Conformance requirement

See clause 14.2.4.1.

14.2.6.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.6.

14.2.6.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x75 (alt. 1x0)	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 84 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 75 bits RB6: 84 bits	RB5: 75 bits RB6: 84 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.6.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x75) and RB6/TF1 (1x84).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS.

14.2.7 Conversational / speech / UL:7.4 DL:7.4 kbps / CS RAB+ UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.7.1 Conformance requirement

See clause 14.2.4.1.

14.2.7.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.7.

14.2.7.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x61 (alt. 1x0)	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 87 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 61 bits RB6: 87 bits	RB5: 61 bits RB6: 87 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.7.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x61) and RB6/TF1 (1x87).

3. At step 15 the UE shall return

   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.8 Conversational / speech / UL:6.7 DL:6.7 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.8.1 Conformance requirement

See clause 14.2.4.1.

14.2.8.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.8.

14.2.8.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x58 (alt. 1x0)	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 76 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 58 bits RB6: 76 bits	RB5: 58 bits RB6: 76 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.8.4 Test requirements

See clause 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x58) and RB6/TF1 (1x76).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.9 Conversational / speech / UL:5.9 DL:5.9 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.9.1 Conformance requirement

See clause 14.2.4.1.

14.2.9.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.9.

14.2.9.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x55 (alt. 1x0)	0x63	0x148
	TF1, bits	1x39	1x63	1x148
	TF2, bits	1x55	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x63	0x148
	TF1, bits	1x39	1x63	1x148
	TF2, bits	1x55	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 63 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 55 bits RB6: 63 bits	RB5: 55 bits RB6: 63 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.9.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x55) and RB6/TF1 (1x63).

3. At step 15 the UE shall return

   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.10 Conversational / speech / UL:5.15 DL:5.15 kbps / CS RAB + UL:1.7 DL:1.7 kbps SRBs for DCCH

14.2.10.1 Conformance requirement

See clause 14.2.4.1.

14.2.10.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.10.

14.2.10.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x49 (alt. 1x0)	0x54	0x148
	TF1, bits	1x39	1x54	1x148
	TF2, bits	1x49	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x54	0x148
	TF1, bits	1x39	1x54	1x148
	TF2, bits	1x49	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 54 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 49 bits RB6: 54 bits	RB5: 49 bits RB6: 54 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.10.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x49) and RB6/TF1 (1x54).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.11 Conversational / speech / UL:4.75 DL:4.75 kbps / CS RAB + UL:1.7 DL:1.7 kbps SRBs for DCCH

14.2.11.1 Conformance requirement

See clause 14.2.4.1.

14.2.11.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.11.

14.2.11.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x49 (alt. 1x0)	0x53	0x148
	TF1, bits	1x39	1x53	1x148
	TF2, bits	1x42	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x53	0x148
	TF1, bits	1x39	1x53	1x148
	TF2, bits	1x42	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 53 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 42 bits RB6: 53 bits	RB5: 42 bits RB6: 53 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.11.4 Test requirements

See clause 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x42) and RB6/TF1 (1x53).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

- for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.12 Conversational / unknown / UL:28.8 DL:28.8 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.12.1 Conformance requirement

See 14.2.4.1.

14.2.12.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.12.

14.2.12.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

		RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)
DL_TFC5	(TF2, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 1152	RB5: 1152
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.12.4 Test requirements

See clause 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x576).
   - for sub-test 2: RB5/TF2 (2x576).
3. At step 15 the UE shall return
   - for sub-test 1 and 2: an RLC SDU on RB5 having the same content as sent by SS.

14.2.13 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.13.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI

14.2.13.1.1 Conformance requirement

See clause 14.2.4.1.

14.2.13.1.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.13 for the 20 ms TTI case.

14.2.13.1.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1280	RB5: 1280
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.13.1.4 Test requirements

See clause 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (2x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.13.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI

14.2.13.2.1 Conformance requirement

See clause 14.2.4.1.

14.2.13.2.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.13 for the 40 ms TTI case.

14.2.13.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	4x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	4x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 2560	RB5: 2560
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.13.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (4x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.14 Conversational / unknown / UL:32 DL:32 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.14.1 Conversational / unknown / UL:32 DL:32 kbps / CS RAB / 20 ms TTI

14.2.14.1.1 Conformance requirement

See 14.2.4.1.

14.2.14.1.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.14 for the 20 ms TTI case.

14.2.14.1.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	1x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	1x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 640	RB5: 640
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.14.1.4 Test requirements

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.14.2 Conversational / unknown / UL:32 DL:32 kbps / CS RAB / 40 ms TTI

14.2.14.2.1 Conformance requirement

See 14.2.4.1.

14.2.14.2.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.14 for the 40 ms TTI case.

14.2.14.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1280	RB5: 1280
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.14.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (2x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.15 Streaming / unknown / UL:14.4/DL:14.4 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.15.1 Conformance requirement

See 14.2.4.1.

14.2.15.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.15.

14.2.15.3 Method of test

Uplink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 576
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.15.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x576).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.16 Streaming / unknown / UL:28.8/DL:28.8 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.16.1 Conformance requirement

See 14.2.4.1.

14.2.16.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.16.

14.2.16.3 Method of test

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

		RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)
DL_TFC5	(TF2, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 1152	RB5: 1152
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.16.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x576).
   - for sub-test 2: RB5/TF2 (2x576).
3. At step 15 the UE shall return
   - for sub-test 1 and 2: an RLC SDU on RB5 having the same content as sent by SS.

14.2.17 Streaming / unknown / UL:57.6/DL:57.6 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.17.1 Conformance requirement

See 14.2.4.1.

14.2.17.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.17.

14.2.17.3 Method of test

Uplink TFS:

	TFI	RB5 (57.6 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A
	TF3, bits	3x576	N/A
	TF4, bits	4x576	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (57.6 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A
	TF3, bits	3x576	N/A
	TF4, bits	4x576	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5,	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1152	RB5: 1152
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1728	RB5: 1728
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2304	RB5: 2304
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.17.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x576).
   - for sub-test 2: RB5/TF2 (2x576).
   - for sub-test 3: RB5/TF3 (3x576).
   - for sub-test 4: RB5/TF4 (4x576).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as sent by SS.

14.2.18 Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.18.1 Conformance requirement

See 14.2.4.1.

14.2.18.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.18.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.18.3 Method of test

Uplink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 320 (note 2)
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576~~1152~~	RB5: 640 (note 3)
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576~~1728~~	RB5: 1280 (note 4)
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576~~2880~~	RB5: 2560 (note 5)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.
NOTE 3: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one~~two~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2~~.
NOTE 4: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one~~three~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3~~.
NOTE 5: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one~~five~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5~~.

See 14.1.1 for test procedure.

14.2.18.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE shall return
   - for sub-test 1~~ to 4~~: an RLC SDU on RB5 having the same content as sent by the SS.
   - for sub-test 2 to 4: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

14.2.19 Streaming / unknown / UL:64 DL:0 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.19.1 Conformance requirement

See 14.2.4.1.

14.2.19.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.19.

To be able to test the uplink radio bearer using the UE loopback function for the reference radio bearer UL:64 DL: 0 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.2 (Streaming/unknown/DL:14.4 kbps) is used in downlink.

14.2.19.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 320	RB5: 576 (note 2)
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 640	RB5: 576 (note 3)
3	DL_TFC1	UL_TFC3	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1280	RB5: 576 (note 4)
4	DL_TFC1	UL_TFC4	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2560	RB5: 576 (note 5)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return the first 320 bits of the test data.
NOTE 3: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU two times (truncating the last one to fit the UL RLC SDU size of 640 bits).
NOTE 4: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU three times (truncating the last one to fit the UL RLC SDU size of 1280 bits).
NOTE 5: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU five times (truncating the last one to fit the UL RLC SDU size of 2560 bits).

See 14.1.1 for test procedure.

14.2.19.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x320).
   - for sub-test 2: RB5/TF2 (2x320).
   - for sub-test 3: RB5/TF3 (4x320).
   - for sub-test 4: RB5/TF4 (8x320).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as the first 320 bits of the DL RLC SDU sent by the SS.
   - for sub-test 2: an RLC SDU on RB5 for which the first 576 bits are equal to the sent DL RLC SDU bit pattern and the remaining 64 bits are equal to the first 64 bits of the sent DL RLC SDU.
   - for sub-test 3: an RLC SDU on RB5 for which the first 1152 bits are equal to the sent DL RLC SDU bit pattern repeated twice and the remaining 128 bits are equal to the first 128 bits of the sent DL RLC SDU.
   - for sub-test 4: an RLC SDU on RB5 for which the first 2304 bits are equal to the sent DL RLC SDU bit pattern repeated four times and the remaining 256 bits are equal to the first 256 of the sent DL RLC SDU.

14.2.20 Streaming / unknown / UL:0 DL:128 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.20.1 Conformance requirement

See 14.2.4.1.

14.2.20.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.20.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 128 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink. For all sub-tests UL_TFC1 is used.

14.2.20.3 Method of test

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A
	TF5, bits	16x320	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 320 (note 2)
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576~~1152~~	RB5: 640 (note 3)
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576~~1728~~	RB5: 1280 (note 4)
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576~~2880~~	RB5: 2560 (note 5)
5	DL_TFC5	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576~~5184~~	RB5: 5120 (note 6)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.
NOTE 3: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one~~two~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2~~.
NOTE 4: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one~~three~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3~~.
NOTE 5: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one~~five~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5~~.
NOTE 6: SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return one~~nine~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#8 and the first 512 bits of RLC PDU#9~~.

See 14.1.1 for test procedure.

14.2.20.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE shall return
   - for sub-test 1~~ to 5~~: an RLC SDU on RB5 having the same content as sent by the SS.
   - for sub-test 2 to 5: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

14.2.21 Streaming / unknown / UL:128 DL:0 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.21.1 Conformance requirement

See 14.2.4.1.

14.2.21.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.21.

To be able to test the uplink radio bearer using the UE loopback function for the reference radio bearer UL:64 DL: 0 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.2 (Streaming/unknown/DL:14.4 kbps) is used in downlink.

14.2.21.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A
	TF5, bits	16x320	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF4, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 320	RB5: 576 (note 2)
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 640	RB5: 576 (note 3)
3	DL_TFC1	UL_TFC3	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 1280	RB5: 576 (note 4)
4	DL_TFC1	UL_TFC4	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 2560	RB5: 576 (note 5)
5	DL_TFC1	UL_TFC5	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 5120	RB5: 576 (note 6)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return the first 320 bits of the test data.
NOTE 3: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU two times (truncating the last one to fit the UL RLC SDU size of 640 bits).
NOTE 4: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU three times (truncating the last one to fit the UL RLC SDU size of 1280 bits).
NOTE 5: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU five times (truncating the last one to fit the UL RLC SDU size of 2560 bits).
NOTE 6: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU nine times (truncating the last one to fit the UL RLC SDU size of 5120 bits).

See 14.1.1 for test procedure.

14.2.21.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x320).
   - for sub-test 2: RB5/TF2 (2x320).
   - for sub-test 3: RB5/TF3 (4x320).
   - for sub-test 4: RB5/TF4 (8x320).
   - for sub-test 5: RB5/TF5 (16x320).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as the first 320 bits of the DL RLC SDU sent by the SS.

- for sub-test 2: an RLC SDU on RB5 for which the first 576 bits are equal to the sent DL RLC SDU bit pattern and the remaining 64 bits are equal to the first 64 bits of the DL RLC SDU sent by the SS.
- for sub-test 3: an RLC SDU on RB5 for which the first 1152 bits are equal to the sent DL RLC SDU bit pattern repeated twice and the remaining 128 bits are equal to the first 128 of the sent DL RLC SDU.
- for sub-test 4: an RLC SDU on RB5 for which the first 2304 bits are equal to the sent DL RLC SDU bit pattern repeated four times and the remaining 256 bits are equal to the first 256 of the sent DL RLC SDU.
- for sub-test 5: an RLC SDU on RB5 for which the first 4608 bits are equal to the sent DL RLC SDU bit pattern repeated eight times and the remaining 512 bits are equal to the first 512 of the sent DL RLC SDU.

14.2.22 Streaming / unknown / UL:0 DL:384 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.22.1 Conformance requirement

See 14.2.4.1.

14.2.22.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.22.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 384 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.22.3 Method of test

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A
	TF5, bits	16x320	N/A
	TF6, bits	32x320	N/A
	TF7, bits	48x320	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF0, TF1)
DL_TFC9	(TF1, TF1)
DL_TFC10	(TF2, TF1)
DL_TFC11	(TF3, TF1)
DL_TFC12	(TF4, TF1)
DL_TFC13	(TF5, TF1)
DL_TFC14	(TF6, TF1)
DL_TFC15	(TF7, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 320 (note 2)
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 5761~~152~~	RB5: 640 (note 3)
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC2,	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 5761~~728~~	RB5: 1280 (note 4)
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 5762~~880~~	RB5: 2560 (note 5)
5	DL_TFC5	UL_TFC1	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 5765~~184~~	RB5: 5120 (note 6)
6	DL_TFC6	UL_TFC1	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 5761~~0368~~	RB5: 10240 (note 7)

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
7	DL_TFC7	UL_TFC1	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576~~15552~~	RB5: 15360 (note 8)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.
NOTE 3: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one ~~two~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2~~.
NOTE 4: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one~~3~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3~~.
NOTE 5: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one~~5~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5~~.
NOTE 6: SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return one~~9~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#8 and the first 512 bits of RLC PDU#9~~.
NOTE 7: SS is using a DL RLC SDU size of 10240 bits as test data (=DL RLC PDU size for DL/TF6). UE will return one~~18~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#17 and the first 448 bits of RLC PDU#18~~.
NOTE 8: SS is using a DL RLC SDU size of 15360 bits as test data (=DL RLC PDU size for DL/TF7). UE will return one~~27~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#26 and the first 384 bits of RLC PDU#27~~.

See 14.1.1 for test procedure.

14.2.22.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE shall return
   - for sub-test 1~~ to 7~~: an RLC SDU on RB5 having the same content as sent by the SS.
   - for sub-test 2 to 7: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

14.2.23 Interactive or background / UL:32 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.23.1 Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC,10 ms TTI)

14.2.23.1.1 Conformance requirement

See 14.2.4.1.

14.2.23.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the turbo channel coding and uplink 10 ms TTI case.

14.2.23.1.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 312~~336~~	RB5: 312~~336~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.23.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.23.2 Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 20 ms TTI)

14.2.23.2.1 Conformance requirement

See 14.2.4.1.

14.2.23.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the turbo channel coding and uplink 20 ms TTI case.

14.2.23.2.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 632~~672~~	RB5: 632~~672~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.23.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
3. At step 15 the UE shall return
   - for sub-test 1 and 2: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.23.3 Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the convolutional channel coding and uplink 10 ms TTI case.

See test case 14.2.23.1 for test procedure and test requirement.

14.2.23.4 Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the convolutional channel coding and uplink 20 ms TTI case.

See test case 14.2.23.2 for test procedure and test requirement.

14.2.24 Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.24.1 Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / TC

14.2.24.1.1 Conformance requirement

See 14.2.4.1.1.

14.2.24.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.24 for the downlink turbo coding case.

14.2.24.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC1	UL_TFC3	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 952~~1008~~	RB5: 952~~1008~~
4	DL_TFC1	UL_TFC4	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1272~~1344~~	RB5: 1272~~1344~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.24.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.24.2 Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / CC

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.24 for the downlink convolutional channel coding case.

See test case 14.2.24.1 for test procedure and test requirement.

14.2.25 Interactive or background / UL:32 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.25.1 Interactive or background / UL:32 DL: 64 kbps / PS RAB / (TC, 10 ms TTI)

14.2.25.1.1 Conformance requirement

See 14.2.4.1.

14.2.25.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink turbo channel coding and 10 ms TTI case.

14.2.25.1.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 952~~1008~~	RB5: 952~~1008~~
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1272~~1344~~	RB5: 1272~~1344~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.25.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 to 4: RB5/TF1 (1x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.25.2 Interactive or background / UL:32 DL: 64 kbps / PS RAB / (TC, 20 ms TTI)

14.2.25.2.1 Conformance requirement

See 14.2.4.1.

14.2.25.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink turbo channel coding and 20 ms TTI case.

14.2.25.2.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 952~~1008~~	RB5: 952~~1008~~
4	DL_TFC4	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 1272~~1344~~	RB5: 1272~~1344~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.25.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF1 (1x336).
   - for sub-test 4: RB5/TF2 (2x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.25.3 Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink convolutional channel coding and 10 ms TTI case.

See test case 14.2.25.1 for test procedure and test requirement.

14.2.25.4 Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink convolutional channel coding and 20 ms TTI case.

See test case 14.2.25.2 for test procedure and test requirement.

14.2.26 Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.26.1 Conformance requirement

See 14.2.4.1.

14.2.26.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.26.

14.2.26.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 952~~1008~~	RB5: 952~~1008~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1272~~1344~~	RB5: 1272~~1344~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.26.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.27 Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.27.1 Conformance requirement

See 14.2.4.1.

14.2.27.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.27.

14.2.27.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1~~344	RB5: 1272~~1~~344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.27.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).

- for sub-test 4: RB5/TF4 (4x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.28 Interactive or background / UL:128 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.28.1 Conformance requirement

See 14.2.4.1.

14.2.28.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.28.

14.2.28.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.28.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.29 Interactive or background / UL:64 DL:144 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.29.1 Conformance requirement

See 14.2.4.1.

14.2.29.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.29.

14.2.29.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (144 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF1)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
5	DL_TFC5	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2872~~3024~~	RB5: 2872~~3024~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.29.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).
   - for sub-test 5: RB5/TF3 (4x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.30 Interactive or background / UL:144 DL:144 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.30.1 Conformance requirement

See 14.2.4.1.

14.2.30.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.30.

14.2.30.3 Method of test

Uplink TFS:

	TFI	RB5 (144 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF1)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (144 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF1)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: ~~2688~~2552	RB5: ~~2688~~2552
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: ~~3024~~2872	RB5: ~~3024~~2872
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.30.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).
   - for sub-test 5: RB5/TF5 (9x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.31 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.31.1 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH/ 10 ms TTI

14.2.31.1.1 Conformance requirement

See 14.2.4.1.

14.2.31.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.31 for the downlink 10 ms TTI case.

14.2.31.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (256 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.31.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.31.2 Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

14.2.31.2.1 Conformance requirement

See 14.2.4.1.

14.2.31.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.31 for the downlink 20 ms TTI case.

14.2.31.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (256 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF0, TF1)
DL_TFC8	(TF1, TF1)
DL_TFC9	(TF2, TF1)
DL_TFC10	(TF3, TF1)
DL_TFC11	(TF4, TF1)
DL_TFC12	(TF5, TF1)
DL_TFC13	(TF6, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1~~344	RB5: 1272~~1~~344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832~~4032~~	RB5: 3832~~4032~~
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112~~5376~~	RB5: 5112~~5376~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.31.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).

- for sub-test 3: RB5/TF3 (3x336).
- for sub-test 4 to 6: RB5/TF4 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1 to 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.32 Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.32.1 Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

14.2.32.1.1 Conformance requirement

See 14.2.4.1.

14.2.32.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.32 for the 10 ms TTI case.

14.2.32.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832~~4032~~	RB5: 3832~~4032~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.32.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 and 5: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.32.2 Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

14.2.32.2.1 Conformance requirement

See 14.2.4.1.

14.2.32.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.32 for the 20 ms TTI case.

14.2.32.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832~~4032~~	RB5: 3832~~4032~~
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112~~5376~~	RB5: 5112~~5376~~
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC9, , UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 6392~~6720~~	RB5: 6392~~6720~~
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672~~8064~~	RB5: 7672~~8064~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.32.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 to 8: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.33 Interactive or background / UL:128 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.33.1 Interactive or background / UL:128 DL:384 kbps / PS RAB / 10 ms TTI

14.2.33.1.1 Conformance requirement

See 14.2.4.1.

14.2.33.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.33 for the 10 ms TTI case.

14.2.33.1.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832~~4032~~	RB5: 3832~~4032~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.33.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.

2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4 and 5: RB5/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.33.2 Interactive or background / UL:128 DL:384 kbps / PS RAB / 20 ms TTI

14.2.33.2.1 Conformance requirement

See 14.2.4.1.

14.2.33.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.33 for the 20 ms TTI case.

14.2.33.2.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552~~2688~~	RB5: 2552~~2688~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5,	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832~~4032~~	RB5: 3832~~4032~~
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112~~5376~~	RB5: 5112~~5376~~
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 6392~~6720~~	RB5: 6392~~6720~~
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4 UL_TFC5, UL_TFC9	RB5: 7672~~8064~~	RB5: 7672~~8064~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.33.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4 to 8: RB5/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.34 Interactive or background / UL:384 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.34.1 Interactive or background / UL:384 DL:384 kbps / PS RAB / 10 ms TTI

14.2.34.1.1 Conformance requirement

See 14.2.4.1.

14.2.34.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.34 for the 10 ms TTI case.

14.2.34.1.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC7, UL_TFC8	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC7, UL_TFC9	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC3, UL_TFC7, UL_TFC10	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC4, UL_TFC7, UL_TFC11	RB5: 2552~~2688~~	RB5: 2552~~2688~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC5, UL_TFC7, UL_TFC12	RB5: 3832~~4032~~	RB5: 3832~~4032~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.34.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).
   - for sub-test 5: RB5/TF4 (12x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.34.2 Interactive or background / UL:384 DL:384 kbps / PS RAB / 20 ms TTI

14.2.34.2.1 Conformance requirement

See 14.2.4.1.

14.2.34.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.34. for the 20 ms TTI case

14.2.34.2.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF6, TF0)
UL_TFC7	(TF7, TF0)
UL_TFC8	(TF8, TF0)
UL_TFC9	(TF0, TF1)
UL_TFC10	(TF1, TF1)
UL_TFC11	(TF2, TF1)
UL_TFC12	(TF3, TF1)
UL_TFC13	(TF4, TF1)
UL_TFC14	(TF5, TF1)
UL_TFC15	(TF6, TF1)
UL_TFC16	(TF7, TF1)
UL_TFC17	(TF8, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 312~~336~~	RB5: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 632~~672~~	RB5: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 1272~~1344~~	RB5: 1272~~1344~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 2552~~2688~~	RB5: 2552~~2688~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 3832~~4032~~	RB5: 3832~~4032~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 5112~~5376~~	RB5: 5112~~5376~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 6392~~6720~~	RB5: 6392~~6720~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 7672~~8064~~	RB5: 7672~~8064~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.34.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).
   - for sub-test 5: RB5/TF5 (12x336).
   - for sub-test 6: RB5/TF6 (16x336).
   - for sub-test 7: RB5/TF7 (20x336).
   - for sub-test 8: RB5/TF8 (24x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.35 Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.35.1 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 10 ms TTI

14.2.35.1.1 Conformance requirement

See 14.2.4.1.

14.2.35.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.35 for the 10 ms TTI case.

14.2.35.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632~~656~~	RB5: 632~~656~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272~~1312~~	RB5: 1272~~1312~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2552~~2624~~	RB5: 2552~~2624~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112~~5248~~	RB5: 5112~~5248~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672~~7872~~	RB5: 7672~~7872~~
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1023~~10496~~	RB5: 1023~~10496~~
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1279~~13120~~	RB5: 1279~~13120~~
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1535~~15744~~	RB5: 1535~~15744~~
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1791~~18368~~	RB5: 1791~~18368~~
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2047~~20992~~	RB5: 2047~~20992~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.35.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 to 10: RB5/TF4 (4x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.35.2 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 20 ms TTI

14.2.35.2.1 Conformance requirement

See 14.2.4.1.

14.2.35.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.35 for the 20 ms TTI case.

14.2.35.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
	TF18, bits	64x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)

TFCI	(RB5, DCCH)
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)
DL_TFC37	(TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632~~656~~	RB5: 632~~656~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272~~1312~~	RB5: 1272~~1312~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2552~~2624~~	RB5: 2552~~2624~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112~~5248~~	RB5: 5112~~5248~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672~~7872~~	RB5: 7672~~7872~~
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1023~~10496~~	RB5: 1023~~10496~~
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1279~~13120~~	RB5: 1279~~13120~~
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1535~~15744~~	RB5: 1535~~15744~~
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1791~~18368~~	RB5: 1791~~18368~~
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2047~~20992~~	RB5: 2047~~20992~~
11	DL_TFC11	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2303~~23616~~	RB5: 2303~~23616~~
12	DL_TFC12	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2559~~26240~~	RB5: 2559~~26240~~
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4 UL_TFC5, UL_TFC9	RB5: 2815~~28864~~	RB5: 2815~~28864~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
14	DL_TFC14	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3071~~231488~~	RB5: 3071~~231488~~
15	DL_TFC15	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3327~~234112~~	RB5: 3327~~234112~~
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3583~~236736~~	RB5: 3583~~236736~~
17	DL_TFC17	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4 UL_TFC5, UL_TFC9	RB5: 3839~~239360~~	RB5: 3839~~239360~~
18	DL_TFC18	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4095~~241984~~	RB5: 4095~~241984~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.35.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 to 18: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.36 Interactive or background / UL:128 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.36.1 Interactive or background / UL:128 DL:2048 kbps / PS RAB / 10 ms TTI

14.2.36.1.1 Conformance requirement

See 14.2.4.1.

14.2.36.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.36 for the 10 ms TTI case.

14.2.36.1.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)

TFCI	(RB5, DCCH)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632~~RB5: 656~~	RB5: 632~~RB5: 656~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272~~RB5: 1312~~	RB5: 1272~~RB5: 1312~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2552~~RB5: 2624~~	RB5: 2552~~RB5: 2624~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112~~RB5: 5248~~	RB5: 5112~~RB5: 5248~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672~~RB5: 7872~~	RB5: 7672~~RB5: 7872~~
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10232~~RB5: 10496~~	RB5: 10232~~RB5: 10496~~
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 12792~~RB5: 13120~~	RB5: 12792~~RB5: 13120~~
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15352~~RB5: 15744~~	RB5: 15352~~RB5: 15744~~
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 17912~~RB5: 18368~~	RB5: 17912~~RB5: 18368~~
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20472~~RB5: 20992~~	RB5: 20472~~RB5: 20992~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.36.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.

2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4 to 10: RB5/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.36.2 Interactive or background / UL:128 DL:2048 kbps / PS RAB / 20 ms TTI

14.2.36.2.1 Conformance requirement

See 14.2.4.1.

14.2.36.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.36 for the 20 ms TTI case.

14.2.36.2.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
	TF18, bits	64x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)

TFCI	(RB5, DCCH)
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)
DL_TFC37	(TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632~~RB5: 656~~	RB5: 632~~RB5: 656~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272~~RB5: 1312~~	RB5: 1272~~RB5: 1312~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2552~~RB5: 2624~~	RB5: 2552~~RB5: 2624~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112~~RB5: 5248~~	RB5: 5112~~RB5: 5248~~
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672~~RB5: 7872~~	RB5: 7672~~RB5: 7872~~
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10232~~RB5: 10496~~	RB5: 10232~~RB5: 10496~~
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 12792~~RB5: 13120~~	RB5: 12792~~RB5: 13120~~
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15352~~RB5: 15744~~	RB5: 15352~~RB5: 15744~~
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 17912~~RB5: 18368~~	RB5: 17912~~RB5: 18368~~
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20472~~RB5: 20992~~	RB5: 20472~~RB5: 20992~~
11	DL_TFC11	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 23032~~RB5: 23616~~	RB5: 23032~~RB5: 23616~~
12	DL_TFC12	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 25592~~RB5: 26240~~	RB5: 25592~~RB5: 26240~~
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 28152~~RB5: 28864~~	RB5: 28152~~RB5: 28864~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
14	DL_TFC14	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 30712~~RB5: 31488~~	RB5: 30712~~RB5: 31488~~
15	DL_TFC15	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 33272~~RB5: 34112~~	RB5: 33272~~RB5: 34112~~
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 35832~~RB5: 36736~~	RB5: 35832~~RB5: 36736~~
17	DL_TFC17	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 38392~~RB5: 39360~~	RB5: 38392~~RB5: 39360~~
18	DL_TFC18	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 40952~~RB5: 41984~~	RB5: 40952~~RB5: 41984~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.36.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4 to 18: RB5/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.37 Interactive or background / UL:384 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.37.1 Interactive or background / UL:384 DL:2048 kbps / PS RAB / 10 ms TTI

14.2.37.1.1 Conformance requirement

See 14.2.4.1.

14.2.37.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.37 for the 10 ms TTI case.

14.2.37.1.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)

TFCI	(RB5, DCCH)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 632~~RB5: 656~~	RB5: 632~~RB5: 656~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 1272~~RB5: 1312~~	RB5: 1272~~RB5: 1312~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 2552~~RB5: 2624~~	RB5: 2552~~RB5: 2624~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 5112~~RB5: 5248~~	RB5: 5112~~RB5: 5248~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 7672~~RB5: 7872~~	RB5: 7672~~RB5: 7872~~
6	DL_TFC6	UL_TFC5	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 10232~~RB5: 10496~~	RB5: 10232~~RB5: 10496~~
7	DL_TFC7	UL_TFC5	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 12792~~RB5: 13120~~	RB5: 12792~~RB5: 13120~~
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 15352~~RB5: 15744~~	RB5: 15352~~RB5: 15744~~
9	DL_TFC9	UL_TFC5	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 17912~~RB5: 18368~~	RB5: 17912~~RB5: 18368~~
10	DL_TFC10	UL_TFC5	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 20472~~RB5: 20992~~	RB5: 20472~~RB5: 20992~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.37.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF3 (8x336).
   - for sub-test 5 to 10: RB5/TF4 (12x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.37.2 Interactive or background / UL:384 DL:2048 kbps / PS RAB / 20 ms TTI

14.2.37.2.1 Conformance requirement

See 14.2.4.1.

14.2.37.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.37 for the 20 ms TTI case.

14.2.37.2.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF6, TF0)
UL_TFC7	(TF7, TF0)
UL_TFC8	(TF8, TF0)
UL_TFC9	(TF0, TF1)
UL_TFC10	(TF1, TF1)

TFCI	(RB5, DCCH)
UL_TFC11	(TF2, TF1)
UL_TFC12	(TF3, TF1)
UL_TFC13	(TF4, TF1)
UL_TFC14	(TF5, TF1)
UL_TFC15	(TF6, TF1)
UL_TFC16	(TF7, TF1)
UL_TFC17	(TF8, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
	TF18, bits	64x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)

TFCI	(RB5, DCCH)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)
DL_TFC37	(TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 632~~RB5: 656~~	RB5: 632~~RB5: 656~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 1272~~RB5: 1312~~	RB5: 1272~~RB5: 1312~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 2552~~RB5: 2624~~	RB5: 2552~~RB5: 2624~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 5112~~RB5: 5248~~	RB5: 5112~~RB5: 5248~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 7672~~RB5: 7872~~	RB5: 7672~~RB5: 7872~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 10232~~RB5: 10496~~	RB5: 10232~~RB5: 10496~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 12792~~RB5: 13120~~	RB5: 12792~~RB5: 13120~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC19, , UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 15352~~RB5: 15744~~	RB5: 15352~~RB5: 15744~~
9	DL_TFC9	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 17912~~RB5: 18368~~	RB5: 17912~~RB5: 18368~~
10	DL_TFC10	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 20472~~RB5: 20992~~	RB5: 20472~~RB5: 20992~~
11	DL_TFC11	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 23032~~RB5: 23616~~	RB5: 23032~~RB5: 23616~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
12	DL_TFC12	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 25592~~RB5: 26240~~	RB5: 25592~~RB5: 26240~~
13	DL_TFC13	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 28152~~RB5: 28864~~	RB5: 28152~~RB5: 28864~~
14	DL_TFC14	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 30712~~RB5: 31488~~	RB5: 30712~~RB5: 31488~~
15	DL_TFC15	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 33272~~RB5: 34112~~	RB5: 33272~~RB5: 34112~~
16	DL_TFC16	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 35832~~RB5: 36736~~	RB5: 35832~~RB5: 36736~~
17	DL_TFC17	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 38392~~RB5: 39360~~	RB5: 38392~~RB5: 39360~~
18	DL_TFC18	UL_TFC8	DL_TFC0, DL_TFC19, , UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 40952~~RB5: 41984~~	RB5: 40952~~RB5: 41984~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.37.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8336).
   - for sub-test 5: RB5/TF5 (12x336).
   - for sub-test 6: RB5/TF6 (16x336).
   - for sub-test 7: RB5/TF7 (20x336).
   - for sub-test 8 to 18: RB5/TF4 (24x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.38 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.38.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 20 ms TTI)

14.2.38.1.1 Conformance requirement

See 14.2.4.1.

14.2.38.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the turbo channel coding and 20 ms TTI case.

14.2.38.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF0, TF1)
UL_TFC10	(TF1, TF0, TF0, TF0, TF1)
UL_TFC11	(TF2, TF1, TF1, TF0, TF1)
UL_TFC12	(TF0, TF0, TF0, TF1, TF1)
UL_TFC13	(TF1, TF0, TF0, TF1, TF1)
UL_TFC14	(TF2, TF1, TF1, TF1, TF1)
UL_TFC15	(TF0, TF0, TF0, TF2, TF1)
UL_TFC16	(TF1, TF0, TF0, TF2, TF1)
UL_TFC17	(TF2, TF1, TF1, TF2, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (8 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: No data RB6: No data RB7: No data RB8: 312~~336~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: 312~~336~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~
6	DL_TFC5	UL_TFC6	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: No data RB6: No data RB7: No data RB8: 632~~672~~
7	DL_TFC5	UL_TFC7	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~672~~
8	DL_TFC5	UL_TFC8	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.38.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.

2. At step 15 the UE transmitted transport format shall be

   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).

3. At step 15 the UE shall return

   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3 and 6: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4 and 7: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5 and 8: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.38.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the turbo channel coding and 10 ms TTI case.

See 14.2.38.1 for test procedure and test requirements. Only sub-tests 1 to 5 are applicable for the 10 ms TTI case.

14.2.38.3 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the convolutional channel coding and 20 ms TTI case.

See test case 14.2.38.1 for test procedure and test requirement.

14.2.38.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the convolutional channel coding and 10 ms TTI case.

See test case 14.2.38.2 for test procedure and test requirement.

14.2.39 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.39.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (TC, 10 ms TTI)

14.2.39.1.1 Conformance requirement

See 14.2.4.1.

14.2.39.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink turbo channel coding and 10 ms TTI case.

14.2.39.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: No data RB6: No data RB7: No data RB8: 312~~336~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: 312~~336~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~
6	DL_TFC6	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: No data RB6: No data RB7: No data RB8: 632~~672~~
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~672~~
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 952~~1008~~	RB5: No data RB6: No data RB7: No data RB8: 952~~1008~~
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 952~~1008~~	RB5: 39 RB6: No data RB7: No data RB8: 952~~1008~~
11	DL_TFC11	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 952~~1008~~	RB5: 81 RB6: 103 RB7: 60 RB8: 952~~1008~~
12	DL_TFC12	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: No data RB6: No data RB7: No data RB8: 1272~~1344~~
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 39 RB6: No data RB7: No data RB8: 1272~~1344~~
14	DL_TFC14	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.39.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3, 6, 9 and 12: RB8/TF1 (1x336)
   - for sub-test 4, 7, 10 and 13: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5, 8, 11 and 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.39.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (TC, 20 ms TTI)

14.2.39.2.1 Conformance requirement

See 14.2.4.1.

14.2.39.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink turbo channel coding and 20 ms TTI case.

14.2.39.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF0, TF1)
UL_TFC10	(TF1, TF0, TF0, TF0, TF1)
UL_TFC11	(TF2, TF1, TF1, TF0, TF1)
UL_TFC12	(TF0, TF0, TF0, TF1, TF1)
UL_TFC13	(TF1, TF0, TF0, TF1, TF1)
UL_TFC14	(TF2, TF1, TF1, TF1, TF1)
UL_TFC15	(TF0, TF0, TF0, TF2, TF1)
UL_TFC16	(TF1, TF0, TF0, TF2, TF1)
UL_TFC17	(TF2, TF1, TF1, TF2, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: No data RB6: No data RB7: No data RB8: 312~~336~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: 312~~336~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: No data RB6: No data RB7: No data RB8: ~~672~~632
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~
9	DL_TFC9	UL_TFC6	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: ~~1008~~952	RB5: No data RB6: No data RB7: No data RB8: 952~~1008~~
10	DL_TFC10	UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 952~~1008~~	RB5: 39 RB6: No data RB7: No data RB8: 952~~1008~~
11	DL_TFC11	UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 952~~1008~~	RB5: 81 RB6: 103 RB7: 60 RB8: 952~~1008~~
12	DL_TFC12	UL_TFC6	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: No data RB6: No data RB7: No data RB8: ~~1344~~1272
13	DL_TFC13	UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 39 RB6: No data RB7: No data RB8: 1272~~1344~~
14	DL_TFC14	UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.39.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6, 9 and 12: RB8/TF2 (2x336)
   - for sub-test 7, 10 and 13: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8, 11 and 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.39.3 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink convolutional channel coding and 10 ms TTI case.

See test case 14.2.39.1 for test procedure and test requirement.

14.2.39.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink convolutional channel coding and 20 ms TTI case.

See test case 14.2.39.2 for test procedure and test requirement.

14.2.40 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.40.1 Conformance requirement

See 14.2.4.1.

14.2.40.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.40.

14.2.40.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: No data RB6: No data RB7: No data RB8: 312~~336~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, DUL_TFC0, UL_TFC15	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: 312~~336~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: No data RB6: No data RB7: No data RB8: 632~~672~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 952~~1008~~	RB5: No data RB6: No data RB7: No data RB8: ~~1008~~952
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 952~~1008~~	RB5: 39 RB6: No data RB7: No data RB8: 952~~1008~~
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 952~~1008~~	RB5: 81 RB6: 103 RB7: 60 RB8: 952~~1008~~
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27~~26~~	RB5: 39 RB6: 103 RB7: 60 RB8: ~~1344~~1272	RB5: No data RB6: No data RB7: No data RB8: 1272~~1344~~
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28~~27~~	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 39 RB6: No data RB7: No data RB8: 1272~~1344~~
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.40.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12: RB8/TF4 (4x336)
   - for sub-test 13: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.41 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.41.1 Conformance requirement

See 14.2.4.1.

14.2.41.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.41.

14.2.41.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 336312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312336	RB5: No data RB6: No data RB7: No data RB8: 312336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312336	RB5: 39 RB6: No data RB7: No data RB8: 312336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312336	RB5: 81 RB6: 103 RB7: 60 RB8: 312336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 672632	RB5: No data RB6: No data RB7: No data RB8: 632672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632672	RB5: 39 RB6: No data RB7: No data RB8: 632672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632672	RB5: 81 RB6: 103 RB7: 60 RB8: 632672
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 12721344	RB5: No data RB6: No data RB7: No data RB8: 13441272
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 12721344	RB5: 39 RB6: No data RB7: No data RB8: 12721344
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 12721344	RB5: 81 RB6: 103 RB7: 60 RB8: 12721344
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: 26882552	RB5: No data RB6: No data RB7: No data RB8: 25522688
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC15, , UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 25522688	RB5: 39 RB6: No data RB7: No data RB8: 25522688
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 25522688	RB5: 81 RB6: 103 RB7: 60 RB8: 25522688

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.41.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12: RB8/TF4 (4x336)
   - for sub-test 13: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.42 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.42.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB / 10 ms TTI

14.2.42.1.1 Conformance requirement

See 14.2.4.1.

14.2.42.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.42 for the downlink 10 ms TTI case.

14.2.42.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (256 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: No data RB6: No data RB7: No data RB8: 312~~336~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: 312~~336~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: No data RB6: No data RB7: No data RB8: 632~~672~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: ~~1344~~1272	RB5: No data RB6: No data RB7: No data RB8: 1272~~1344~~
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 39 RB6: No data RB7: No data RB8: 1272~~1344~~
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27~~26~~	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2688~~	RB5: No data RB6: No data RB7: No data RB8: ~~2688~~2552
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28~~27~~	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2688~~	RB5: 39 RB6: No data RB7: No data RB8: 2552~~2688~~
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2688~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2688~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.42.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12: RB8/TF4 (4x336)
   - for sub-test 13: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.42.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

14.2.42.2.1 Conformance requirement

See 14.2.4.1.

14.2.42.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.42 for the downlink 20 ms TTI case.

14.2.42.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (256 kbps, 20 ms)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A
	TF6, bits	N/A	N/A	N/A	16x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF0, TF1)
DL_TFC22	(TF1, TF0, TF0, TF0, TF1)
DL_TFC23	(TF2, TF1, TF1, TF0, TF1)
DL_TFC24	(TF0, TF0, TF0, TF1, TF1)
DL_TFC25	(TF1, TF0, TF0, TF1, TF1)
DL_TFC26	(TF2, TF1, TF1, TF1, TF1)
DL_TFC27	(TF0, TF0, TF0, TF2, TF1)
DL_TFC28	(TF1, TF0, TF0, TF2, TF1)
DL_TFC29	(TF2, TF1, TF1, TF2, TF1)
DL_TFC30	(TF0, TF0, TF0, TF3, TF1)
DL_TFC31	(TF1, TF0, TF0, TF3, TF1)
DL_TFC32	(TF2, TF1, TF1, TF3, TF1)
DL_TFC33	(TF0, TF0, TF0, TF4, TF1)
DL_TFC34	(TF1, TF0, TF0, TF4, TF1)
DL_TFC35	(TF2, TF1, TF1, TF4, TF1)
DL_TFC36	(TF0, TF0, TF0, TF5, TF1)
DL_TFC37	(TF1, TF0, TF0, TF5, TF1)
DL_TFC38	(TF2, TF1, TF1, TF5, TF1)
DL_TFC39	(TF0, TF0, TF0, TF6, TF1)
DL_TFC40	(TF1, TF0, TF0, TF6, TF1)
DL_TFC41	(TF2, TF1, TF1, TF6, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: No data RB6: No data RB7: No data RB8: 312~~336~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: 312~~336~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: No data RB6: No data RB7: No data RB8: 632~~672~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 12721~~344~~	RB5: No data RB6: No data RB7: No data RB8: ~~1344~~1272
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 12721~~344~~	RB5: 39 RB6: No data RB7: No data RB8: 12721~~344~~
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 12721~~344~~	RB5: 81 RB6: 103 RB7: 60 RB8: 12721~~344~~
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: ~~2688~~2552	RB5: No data RB6: No data RB7: No data RB8: 2552~~2688~~
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2688~~	RB5: 39 RB6: No data RB7: No data RB8: 2552~~2688~~
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2688~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2688~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: 38324032	RB5: No data RB6: No data RB7: No data RB8: 40323832
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 38324032	RB5: 39 RB6: No data RB7: No data RB8: 38324032
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 38324032	RB5: 81 RB6: 103 RB7: 60 RB8: 38324032
18	DL_TFC18	UL_TFC12	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: 51125376	RB5: No data RB6: No data RB7: No data RB8: 51125376
19	DL_TFC19	UL_TFC13	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 51125376	RB5: 39 RB6: No data RB7: No data RB8: 51125376
20	DL_TFC20	UL_TFC14	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 51125376	RB5: 81 RB6: 103 RB7: 60 RB8: 51125376
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.42.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).

- for sub-test 12, 15 and 18: RB8/TF4 (4x336)
- for sub-test 13, 16 and 19: RB5/TF1 (1x39) and RB8/TF4 (4x336).
- for sub-test 14, 17 and 20: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9, 12, 15 and 18: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10, 13, 16 and 19: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11, 14, 17 and 20: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.43 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.43.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

14.2.43.1.1 Conformance requirement

See 14.2.4.1.

14.2.43.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.43 for the downlink 10 ms TTI case.

14.2.43.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (384 kbps, 10 ms)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF0, TF1)
DL_TFC19	(TF1, TF0, TF0, TF0, TF1)
DL_TFC20	(TF2, TF1, TF1, TF0, TF1)
DL_TFC21	(TF0, TF0, TF0, TF1, TF1)
DL_TFC22	(TF1, TF0, TF0, TF1, TF1)
DL_TFC23	(TF2, TF1, TF1, TF1, TF1)
DL_TFC24	(TF0, TF0, TF0, TF2, TF1)
DL_TFC25	(TF1, TF0, TF0, TF2, TF1)
DL_TFC26	(TF2, TF1, TF1, TF2, TF1)
DL_TFC27	(TF0, TF0, TF0, TF3, TF1)
DL_TFC28	(TF1, TF0, TF0, TF3, TF1)
DL_TFC29	(TF2, TF1, TF1, TF3, TF1)
DL_TFC30	(TF0, TF0, TF0, TF4, TF1)
DL_TFC31	(TF1, TF0, TF0, TF4, TF1)
DL_TFC32	(TF2, TF1, TF1, TF4, TF1)
DL_TFC33	(TF0, TF0, TF0, TF5, TF1)
DL_TFC34	(TF1, TF0, TF0, TF5, TF1)
DL_TFC35	(TF2, TF1, TF1, TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 336312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312336	RB5: No data RB6: No data RB7: No data RB8: 312336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312336	RB5: 39 RB6: No data RB7: No data RB8: 312336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312336	RB5: 81 RB6: 103 RB7: 60 RB8: 312336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 672632	RB5: No data RB6: No data RB7: No data RB8: 632672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632672	RB5: 39 RB6: No data RB7: No data RB8: 632672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632672	RB5: 81 RB6: 103 RB7: 60 RB8: 632672
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 12721344	RB5: No data RB6: No data RB7: No data RB8: 13441272
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 12721344	RB5: 39 RB6: No data RB7: No data RB8: 12721344
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 12721344	RB5: 81 RB6: 103 RB7: 60 RB8: 12721344
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: 25522688	RB5: No data RB6: No data RB7: No data RB8: 25522688
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 25522688	RB5: 39 RB6: No data RB7: No data RB8: 25522688
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 25522688	RB5: 81 RB6: 103 RB7: 60 RB8: 25522688

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: 38324032	RB5: No data RB6: No data RB7: No data RB8: 40323832
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC18, , UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 38324032	RB5: 39 RB6: No data RB7: No data RB8: 38324032
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 38324032	RB5: 81 RB6: 103 RB7: 60 RB8: 38324032
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.43.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12 and 15: RB8/TF4 (4x336)
   - for sub-test 13 and 16: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14 and 17: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.

- for sub-test 3, 6, 9, 12 and 15: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 4, 7, 10, 13 and 16: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 5, 8, 11, 14, and 17: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.43.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

14.2.43.2.1 Conformance requirement

See 14.2.4.1.

14.2.43.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.43 for the downlink 20 ms TTI case.

14.2.43.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (384 kbps, 10 ms)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A
	TF6, bits	N/A	N/A	N/A	16x336	N/A
	TF7, bits	N/A	N/A	N/A	20x336	N/A
	TF8, bits	N/A	N/A	N/A	24x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF0, TF1)
DL_TFC28	(TF1, TF0, TF0, TF0, TF1)
DL_TFC29	(TF2, TF1, TF1, TF0, TF1)
DL_TFC30	(TF0, TF0, TF0, TF1, TF1)
DL_TFC31	(TF1, TF0, TF0, TF1, TF1)
DL_TFC32	(TF2, TF1, TF1, TF1, TF1)
DL_TFC33	(TF0, TF0, TF0, TF2, TF1)
DL_TFC34	(TF1, TF0, TF0, TF2, TF1)
DL_TFC35	(TF2, TF1, TF1, TF2, TF1)
DL_TFC36	(TF0, TF0, TF0, TF3, TF1)
DL_TFC37	(TF1, TF0, TF0, TF3, TF1)
DL_TFC38	(TF2, TF1, TF1, TF3, TF1)
DL_TFC39	(TF0, TF0, TF0, TF4, TF1)
DL_TFC40	(TF1, TF0, TF0, TF4, TF1)
DL_TFC41	(TF2, TF1, TF1, TF4, TF1)
DL_TFC42	(TF0, TF0, TF0, TF5, TF1)
DL_TFC43	(TF1, TF0, TF0, TF5, TF1)
DL_TFC44	(TF2, TF1, TF1, TF5, TF1)
DL_TFC45	(TF0, TF0, TF0, TF6, TF1)
DL_TFC46	(TF1, TF0, TF0, TF6, TF1)
DL_TFC47	(TF2, TF1, TF1, TF6, TF1)
DL_TFC48	(TF0, TF0, TF0, TF7, TF1)
DL_TFC49	(TF1, TF0, TF0, TF7, TF1)
DL_TFC50	(TF2, TF1, TF1, TF7, TF1)
DL_TFC51	(TF0, TF0, TF0, TF8, TF1)
DL_TFC52	(TF1, TF0, TF0, TF8, TF1)
DL_TFC53	(TF2, TF1, TF1, TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: No data RB6: No data RB7: No data RB8: 312~~336~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15,	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 39 RB6: No data RB7: No data RB8: 312~~336~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~	RB5: 81 RB6: 103 RB7: 60 RB8: 312~~336~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: No data RB6: No data RB7: No data RB8: ~~672~~632
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~672~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: ~~1344~~1272	RB5: No data RB6: No data RB7: No data RB8: 1272~~1344~~
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 39 RB6: No data RB7: No data RB8: 1272~~1344~~
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1344~~
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27~~26~~	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2688~~	RB5: No data RB6: No data RB7: No data RB8: ~~2688~~2552
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28~~27~~	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2688~~	RB5: 39 RB6: No data RB7: No data RB8: 2552~~2688~~
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2688~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2688~~
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27~~26~~	RB5: 39 RB6: 103 RB7: 60 RB8: 3832~~4032~~	RB5: No data RB6: No data RB7: No data RB8: 3832~~4032~~
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC27, , UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28~~27~~	RB5: 39 RB6: 103 RB7: 60 RB8: 3832~~4032~~	RB5: 39 RB6: No data RB7: No data RB8: 3832~~4032~~

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 38324032	RB5: 81 RB6: 103 RB7: 60 RB8: 38324032
18	DL_TFC18	UL_TFC12	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: 51125376	RB5: No data RB6: No data RB7: No data RB8: 53765112
19	DL_TFC19	UL_TFC13	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 51125376	RB5: 39 RB6: No data RB7: No data RB8: 51125376
20	DL_TFC20	UL_TFC14	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 51125376	RB5: 81 RB6: 103 RB7: 60 RB8: 51125376
21	DL_TFC21	UL_TFC12	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: 67206392	RB5: No data RB6: No data RB7: No data RB8: 63926720
22	DL_TFC22	UL_TFC13	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 63926720	RB5: 39 RB6: No data RB7: No data RB8: 63926720
23	DL_TFC23	UL_TFC14	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 63926720	RB5: 81 RB6: 103 RB7: 60 RB8: 63926720
24	DL_TFC24	UL_TFC12	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC2726	RB5: 39 RB6: 103 RB7: 60 RB8: 76728064	RB5: No data RB6: No data RB7: No data RB8: 76728064
25	DL_TFC25	UL_TFC13	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC2827	RB5: 39 RB6: 103 RB7: 60 RB8: 76728064	RB5: 39 RB6: No data RB7: No data RB8: 76728064
26	DL_TFC26	UL_TFC14	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 76728064	RB5: 81 RB6: 103 RB7: 60 RB8: 76728064
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.43.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be

- for sub-test 1: RB5/TF1 (1x39).
- for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
- for sub-test 3: RB8/TF1 (1x336)
- for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
- for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
- for sub-test 6: RB8/TF2 (2x336)
- for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
- for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
- for sub-test 9: RB8/TF3 (3x336)
- for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
- for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
- for sub-test 12, 15, 18, 21 and 24: RB8/TF4 (4x336)
- for sub-test 13, 16, 19, 22 and 25: RB5/TF1 (1x39) and RB8/TF4 (4x336).
- for sub-test 14, 17, 20, 23 and 26: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9, 12, 15, 18, 21 and 24: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10, 13, 16, 19, 22 and 25: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11, 14, 17, 20, 23 and 26: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.44 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.44.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB / 10 ms TTI

14.2.44.1.1 Conformance requirement

See 14.2.4.1.

14.2.44.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.44 for the downlink 10 ms TTI case.

14.2.44.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (2048 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x656	0x148
	TF1, bits	1x39	1x103	1x60	1x656	1x148
	TF2, bits	1x81	N/A	N/A	2x656	N/A
	TF3, bits	N/A	N/A	N/A	4x656	N/A
	TF4, bits	N/A	N/A	N/A	8x656	N/A
	TF5, bits	N/A	N/A	N/A	12x656	N/A
	TF6, bits	N/A	N/A	N/A	16x656	N/A
	TF7, bits	N/A	N/A	N/A	20x656	N/A
	TF8, bits	N/A	N/A	N/A	24x656	N/A
	TF9, bits	N/A	N/A	N/A	28x656	N/A
	TF10, bits	N/A	N/A	N/A	32x656	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF9, TF0)
DL_TFC28	(TF1, TF0, TF0, TF9, TF0)
DL_TFC29	(TF2, TF1, TF1, TF9, TF0)
DL_TFC30	(TF0, TF0, TF0, TF10, TF0)
DL_TFC31	(TF1, TF0, TF0, TF10, TF0)
DL_TFC32	(TF2, TF1, TF1, TF10, TF0)
DL_TFC33	(TF0, TF0, TF0, TF0, TF1)
DL_TFC34	(TF1, TF0, TF0, TF0, TF1)
DL_TFC35	(TF2, TF1, TF1, TF0, TF1)
DL_TFC36	(TF0, TF0, TF0, TF1, TF1)
DL_TFC37	(TF1, TF0, TF0, TF1, TF1)
DL_TFC38	(TF2, TF1, TF1, TF1, TF1)
DL_TFC39	(TF0, TF0, TF0, TF2, TF1)
DL_TFC40	(TF1, TF0, TF0, TF2, TF1)
DL_TFC41	(TF2, TF1, TF1, TF2, TF1)
DL_TFC42	(TF0, TF0, TF0, TF3, TF1)
DL_TFC43	(TF1, TF0, TF0, TF3, TF1)
DL_TFC44	(TF2, TF1, TF1, TF3, TF1)
DL_TFC45	(TF0, TF0, TF0, TF4, TF1)
DL_TFC46	(TF1, TF0, TF0, TF4, TF1)
DL_TFC47	(TF2, TF1, TF1, TF4, TF1)
DL_TFC48	(TF0, TF0, TF0, TF5, TF1)
DL_TFC49	(TF1, TF0, TF0, TF5, TF1)
DL_TFC50	(TF2, TF1, TF1, TF5, TF1)
DL_TFC51	(TF0, TF0, TF0, TF6, TF1)
DL_TFC52	(TF1, TF0, TF0, TF6, TF1)
DL_TFC53	(TF2, TF1, TF1, TF6, TF1)
DL_TFC54	(TF0, TF0, TF0, TF7, TF1)
DL_TFC55	(TF1, TF0, TF0, TF7, TF1)
DL_TFC56	(TF2, TF1, TF1, TF7, TF1)
DL_TFC57	(TF0, TF0, TF0, TF8, TF1)
DL_TFC58	(TF1, TF0, TF0, TF8, TF1)
DL_TFC59	(TF2, TF1, TF1, TF8, TF1)
DL_TFC60	(TF0, TF0, TF0, TF9, TF1)

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC61	(TF1, TF0, TF0, TF9, TF1)
DL_TFC62	(TF2, TF1, TF1, TF9, TF1)
DL_TFC63	(TF0, TF0, TF0, TF10, TF1)
DL_TFC64	(TF1, TF0, TF0, TF10, TF1)
DL_TFC65	(TF2, TF1, TF1, TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: No data RB6: No data RB7: No data RB8: 632~~656~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~656~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~656~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: ~~1312~~1272	RB5: No data RB6: No data RB7: No data RB8: 1272~~1312~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1312~~	RB5: 39 RB6: No data RB7: No data RB8: 1272~~1312~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1312~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1312~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2624~~	RB5: No data RB6: No data RB7: No data RB8: ~~2624~~2552
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2624~~	RB5: 39 RB6: No data RB7: No data RB8: 2552~~2624~~
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2624~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2624~~

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 52485112	RB5: No data RB6: No data RB7: No data RB8: 51125248
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 51125248	RB5: 39 RB6: No data RB7: No data RB8: 51125248
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 51125248	RB5: 81 RB6: 103 RB7: 60 RB8: 51125248
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 76727872	RB5: No data RB6: No data RB7: No data RB8: 78727672
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 76727872	RB5: 39 RB6: No data RB7: No data RB8: 76727872
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 76727872	RB5: 81 RB6: 103 RB7: 60 RB8: 76727872
18	DL_TFC18	UL_TFC12	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1049610232	RB5: No data RB6: No data RB7: No data RB8: 1023210496
19	DL_TFC19	UL_TFC13	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1023210496	RB5: 39 RB6: No data RB7: No data RB8: 1023210496
20	DL_TFC20	UL_TFC14	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1023210496	RB5: 81 RB6: 103 RB7: 60 RB8: 1023210496
21	DL_TFC21	UL_TFC12	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1279213120	RB5: No data RB6: No data RB7: No data RB8: 1279213120
22	DL_TFC22	UL_TFC13	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1279213120	RB5: 39 RB6: No data RB7: No data RB8: 1279213120
23	DL_TFC23	UL_TFC14	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1279213120	RB5: 81 RB6: 103 RB7: 60 RB8: 1279213120

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
24	DL_TFC24	UL_TFC12	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1535~~215~~744	RB5: No data RB6: No data RB7: No data RB8: 1535~~215~~744
25	DL_TFC25	UL_TFC13	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1535~~215~~744	RB5: 39 RB6: No data RB7: No data RB8: 1535~~215~~744
26	DL_TFC26	UL_TFC14	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1535~~215~~744	RB5: 81 RB6: 103 RB7: 60 RB8: 1535~~215~~744
27	DL_TFC27	UL_TFC12	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1791~~218368~~	RB5: No data RB6: No data RB7: No data RB8: ~~18368~~17912
28	DL_TFC28	UL_TFC13	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1791~~218368~~	RB5: 39 RB6: No data RB7: No data RB8: 1791~~218368~~
29	DL_TFC29	UL_TFC14	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1791~~218368~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1791~~218368~~
30	DL_TFC30	UL_TFC12	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: ~~2099~~20472	RB5: No data RB6: No data RB7: No data RB8: 2047~~220992~~
31	DL_TFC31	UL_TFC13	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2047~~220992~~	RB5: 39 RB6: No data RB7: No data RB8: 2047~~220992~~
32	DL_TFC32	UL_TFC14	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2047~~220992~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2047~~220992~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.44.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)

- for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
- for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
- for sub-test 6: RB8/TF2 (2x336)
- for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
- for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
- for sub-test 9: RB8/TF3 (4x336)
- for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (4x336).
- for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (4x336).
- for sub-test 12,15,18,21,24,27,30: RB8/TF4 (8x336)
- for sub-test 13,16,19,22,25,28,31: RB5/TF1 (1x39) and RB8/TF4 (8x336).
- for sub-test 14,17,20,23,26,29,32: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (8x336).

3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9, 12, 15, 18, 21, 24, 27, 30: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10, 13, 16, 19, 22, 25, 28, 31: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11, 14, 17, 20, 23, 26, 29, 32: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.44.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB / 20 ms TTI

14.2.44.2.1 Conformance requirement

See 14.2.4.1.

14.2.44.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.44 for the downlink 20 ms TTI case.

14.2.44.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (2048 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x656	0x148
	TF1, bits	1x39	1x103	1x60	1x656	1x148
	TF2, bits	1x81	N/A	N/A	2x656	N/A
	TF3, bits	N/A	N/A	N/A	4x656	N/A
	TF4, bits	N/A	N/A	N/A	8x656	N/A
	TF5, bits	N/A	N/A	N/A	12x656	N/A
	TF6, bits	N/A	N/A	N/A	16x656	N/A
	TF7, bits	N/A	N/A	N/A	20x656	N/A
	TF8, bits	N/A	N/A	N/A	24x656	N/A
	TF9, bits	N/A	N/A	N/A	28x656	N/A
	TF10, bits	N/A	N/A	N/A	32x656	N/A
	TF11, bits	N/A	N/A	N/A	36x656	N/A
	TF12, bits	N/A	N/A	N/A	40x656	N/A
	TF13, bits	N/A	N/A	N/A	44x656	N/A
	TF14, bits	N/A	N/A	N/A	48x656	N/A
	TF15, bits	N/A	N/A	N/A	52x656	N/A
	TF16, bits	N/A	N/A	N/A	56x656	N/A
	TF17, bits	N/A	N/A	N/A	60x656	N/A
	TF18, bits	N/A	N/A	N/A	64x656	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF9, TF0)
DL_TFC28	(TF1, TF0, TF0, TF9, TF0)
DL_TFC29	(TF2, TF1, TF1, TF9, TF0)
DL_TFC30	(TF0, TF0, TF0, TF10, TF0)
DL_TFC31	(TF1, TF0, TF0, TF10, TF0)
DL_TFC32	(TF2, TF1, TF1, TF10, TF0)
DL_TFC33	(TF0, TF0, TF0, TF11, TF0)
DL_TFC34	(TF1, TF0, TF0, TF11, TF0)
DL_TFC35	(TF2, TF1, TF1, TF11, TF0)
DL_TFC36	(TF0, TF0, TF0, TF12, TF0)
DL_TFC37	(TF1, TF0, TF0, TF12, TF0)
DL_TFC38	(TF2, TF1, TF1, TF12, TF0)
DL_TFC39	(TF0, TF0, TF0, TF13, TF0)
DL_TFC40	(TF1, TF0, TF0, TF13, TF0)
DL_TFC41	(TF2, TF1, TF1, TF13, TF0)
DL_TFC42	(TF0, TF0, TF0, TF14, TF0)
DL_TFC43	(TF1, TF0, TF0, TF14, TF0)
DL_TFC44	(TF2, TF1, TF1, TF14, TF0)
DL_TFC45	(TF0, TF0, TF0, TF15, TF0)
DL_TFC46	(TF1, TF0, TF0, TF15, TF0)
DL_TFC47	(TF2, TF1, TF1, TF15, TF0)
DL_TFC48	(TF0, TF0, TF0, TF16, TF0)
DL_TFC49	(TF1, TF0, TF0, TF16, TF0)
DL_TFC50	(TF2, TF1, TF1, TF16, TF0)
DL_TFC51	(TF0, TF0, TF0, TF17, TF0)
DL_TFC52	(TF1, TF0, TF0, TF17, TF0)
DL_TFC53	(TF2, TF1, TF1, TF17, TF0)
DL_TFC54	(TF0, TF0, TF0, TF18, TF0)
DL_TFC55	(TF1, TF0, TF0, TF18, TF0)
DL_TFC56	(TF2, TF1, TF1, TF18, TF0)
DL_TFC57	(TF0, TF0, TF0, TF0, TF1)
DL_TFC58	(TF1, TF0, TF0, TF0, TF1)
DL_TFC59	(TF2, TF1, TF1, TF0, TF1)
DL_TFC60	(TF0, TF0, TF0, TF1, TF1)

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC61	(TF1, TF0, TF0, TF1, TF1)
DL_TFC61	(TF2, TF1, TF1, TF1, TF1)
DL_TFC63	(TF0, TF0, TF0, TF2, TF1)
DL_TFC64	(TF1, TF0, TF0, TF2, TF1)
DL_TFC65	(TF2, TF1, TF1, TF2, TF1)
DL_TFC66	(TF0, TF0, TF0, TF3, TF1)
DL_TFC67	(TF1, TF0, TF0, TF3, TF1)
DL_TFC68	(TF2, TF1, TF1, TF3, TF1)
DL_TFC69	(TF0, TF0, TF0, TF4, TF1)
DL_TFC70	(TF1, TF0, TF0, TF4, TF1)
DL_TFC71	(TF2, TF1, TF1, TF4, TF1)
DL_TFC72	(TF0, TF0, TF0, TF5, TF1)
DL_TFC73	(TF1, TF0, TF0, TF5, TF1)
DL_TFC74	(TF2, TF1, TF1, TF5, TF1)
DL_TFC75	(TF0, TF0, TF0, TF6, TF1)
DL_TFC76	(TF1, TF0, TF0, TF6, TF1)
DL_TFC77	(TF2, TF1, TF1, TF6, TF1)
DL_TFC78	(TF0, TF0, TF0, TF7, TF1)
DL_TFC79	(TF1, TF0, TF0, TF7, TF1)
DL_TFC80	(TF2, TF1, TF1, TF7, TF1)
DL_TFC81	(TF0, TF0, TF0, TF8, TF1)
DL_TFC82	(TF1, TF0, TF0, TF8, TF1)
DL_TFC83	(TF2, TF1, TF1, TF8, TF1)
DL_TFC84	(TF0, TF0, TF0, TF9, TF1)
DL_TFC85	(TF1, TF0, TF0, TF9, TF1)
DL_TFC86	(TF2, TF1, TF1, TF9, TF1)
DL_TFC87	(TF0, TF0, TF0, TF10, TF1)
DL_TFC88	(TF1, TF0, TF0, TF10, TF1)
DL_TFC89	(TF2, TF1, TF1, TF10, TF1)
DL_TFC90	(TF0, TF0, TF0, TF11, TF1)
DL_TFC91	(TF1, TF0, TF0, TF11, TF1)
DL_TFC92	(TF2, TF1, TF1, TF11, TF1)
DL_TFC93	(TF0, TF0, TF0, TF12, TF1)
DL_TFC94	(TF1, TF0, TF0, TF12, TF1)
DL_TFC95	(TF2, TF1, TF1, TF12, TF1)
DL_TFC96	(TF0, TF0, TF0, TF13, TF1)
DL_TFC97	(TF1, TF0, TF0, TF13, TF1)
DL_TFC98	(TF2, TF1, TF1, TF13, TF1)
DL_TFC99	(TF0, TF0, TF0, TF14, TF1)
DL_TFC100	(TF1, TF0, TF0, TF14, TF1)
DL_TFC101	(TF2, TF1, TF1, TF14, TF1)
DL_TFC102	(TF0, TF0, TF0, TF15, TF1)
DL_TFC103	(TF1, TF0, TF0, TF15, TF1)
DL_TFC104	(TF2, TF1, TF1, TF15, TF1)
DL_TFC105	(TF0, TF0, TF0, TF16, TF1)
DL_TFC106	(TF1, TF0, TF0, TF16, TF1)
DL_TFC107	(TF2, TF1, TF1, TF16, TF1)
DL_TFC108	(TF0, TF0, TF0, TF17, TF1)
DL_TFC109	(TF1, TF0, TF0, TF17, TF1)
DL_TFC110	(TF2, TF1, TF1, TF17, TF1)
DL_TFC111	(TF0, TF0, TF0, TF18, TF1)
DL_TFC112	(TF1, TF0, TF0, TF18, TF1)
DL_TFC113	(TF2, TF1, TF1, TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: No data RB6: No data RB7: No data RB8: 632~~656~~
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: 39 RB6: No data RB7: No data RB8: 632~~656~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~656~~	RB5: 81 RB6: 103 RB7: 60 RB8: 632~~656~~
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: ~~1312~~1272	RB5: No data RB6: No data RB7: No data RB8: 1272~~1312~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 1272~~1312~~	RB5: 39 RB6: No data RB7: No data RB8: 1272~~1312~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1312~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1272~~1312~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2624~~	RB5: No data RB6: No data RB7: No data RB8: ~~2624~~2552
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 2552~~2624~~	RB5: 39 RB6: No data RB7: No data RB8: 2552~~2624~~
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2624~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2552~~2624~~
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: ~~5248~~5112	RB5: No data RB6: No data RB7: No data RB8: 5112~~5248~~
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 5112~~5248~~	RB5: 39 RB6: No data RB7: No data RB8: 5112~~5248~~

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 5112~~5248~~	RB5: 81 RB6: 103 RB7: 60 RB8: 5112~~5248~~
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 7672~~7872~~	RB5: No data RB6: No data RB7: No data RB8: ~~7872~~7672
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 7672~~7872~~	RB5: 39 RB6: No data RB7: No data RB8: 7672~~7872~~
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 7672~~7872~~	RB5: 81 RB6: 103 RB7: 60 RB8: 7672~~7872~~
18	DL_TFC18	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: ~~1049~~10232	RB5: No data RB6: No data RB7: No data RB8: 1023~~10496~~
19	DL_TFC19	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1023~~10496~~	RB5: 39 RB6: No data RB7: No data RB8: 1023~~10496~~
20	DL_TFC20	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1023~~10496~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1023~~10496~~
21	DL_TFC21	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1279~~13120~~	RB5: No data RB6: No data RB7: No data RB8: ~~1312~~012792
22	DL_TFC22	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1279~~13120~~	RB5: 39 RB6: No data RB7: No data RB8: 1279~~13120~~
23	DL_TFC23	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1279~~13120~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1279~~13120~~
24	DL_TFC24	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: ~~1574~~15352	RB5: No data RB6: No data RB7: No data RB8: 1535~~15744~~
25	DL_TFC25	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1535~~15744~~	RB5: 39 RB6: No data RB7: No data RB8: 1535~~15744~~

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
26	DL_TFC26	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1535~~15744~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1535~~15744~~
27	DL_TFC27	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1791~~18368~~	RB5: No data RB6: No data RB7: No data RB8: 1791~~18368~~
28	DL_TFC28	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1791~~18368~~	RB5: 39 RB6: No data RB7: No data RB8: 1791~~18368~~
29	DL_TFC29	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1791~~18368~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1791~~18368~~
30	DL_TFC30	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: ~~2099~~20472	RB5: No data RB6: No data RB7: No data RB8: 2047~~20992~~
31	DL_TFC31	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2047~~20992~~	RB5: 39 RB6: No data RB7: No data RB8: 2047~~20992~~
32	DL_TFC32	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2047~~20992~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2047~~20992~~
33	DL_TFC33	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2303~~23616~~	RB5: No data RB6: No data RB7: No data RB8: 2303~~23616~~
34	DL_TFC34	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2303~~23616~~	RB5: 39 RB6: No data RB7: No data RB8: 2303~~23616~~
35	DL_TFC35	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2303~~23616~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2303~~23616~~
36	DL_TFC36	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2559~~26240~~	RB5: No data RB6: No data RB7: No data RB8: 2559~~26240~~
37	DL_TFC37	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2559~~26240~~	RB5: 39 RB6: No data RB7: No data RB8: 2559~~26240~~

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
38	DL_TFC38	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 25592~~26240~~	RB5: 81 RB6: 103 RB7: 60 RB8: 25592~~26240~~
39	DL_TFC39	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: ~~28864~~28152	RB5: No data RB6: No data RB7: No data RB8: 2815~~28864~~
40	DL_TFC40	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2815~~28864~~	RB5: 39 RB6: No data RB7: No data RB8: 2815~~28864~~
41	DL_TFC41	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2815~~28864~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2815~~28864~~
42	DL_TFC42	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 3071~~31488~~	RB5: No data RB6: No data RB7: No data RB8: 3071~~31488~~
43	DL_TFC43	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 3071~~31488~~	RB5: 39 RB6: No data RB7: No data RB8: 3071~~31488~~
44	DL_TFC44	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 3071~~31488~~	RB5: 81 RB6: 103 RB7: 60 RB8: 3071~~31488~~
45	DL_TFC45	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 3327~~34112~~	RB5: No data RB6: No data RB7: No data RB8: 3327~~34112~~
46	DL_TFC46	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 3327~~34112~~	RB5: 39 RB6: No data RB7: No data RB8: 3327~~34112~~
47	DL_TFC47	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 3327~~34112~~	RB5: 81 RB6: 103 RB7: 60 RB8: 3327~~34112~~
48	DL_TFC48	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 3583~~36736~~	RB5: No data RB6: No data RB7: No data RB8: 3583~~36736~~
49	DL_TFC49	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 3583~~36736~~	RB5: 39 RB6: No data RB7: No data RB8: 3583~~36736~~

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
50	DL_TFC50	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 3583236736	RB5: 81 RB6: 103 RB7: 60 RB8: 3583236736
51	DL_TFC51	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 3936038392	RB5: No data RB6: No data RB7: No data RB8: 3839239360
52	DL_TFC52	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 3839239360	RB5: 39 RB6: No data RB7: No data RB8: 3839239360
53	DL_TFC53	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 3839239360	RB5: 81 RB6: 103 RB7: 60 RB8: 3839239360
54	DL_TFC54	UL_TFC12	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 4095241984	RB5: No data RB6: No data RB7: No data RB8: 4095241984
55	DL_TFC55	UL_TFC13	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 4095241984	RB5: 39 RB6: No data RB7: No data RB8: 4095241984
56	DL_TFC56	UL_TFC14	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 4095241984	RB5: 81 RB6: 103 RB7: 60 RB8: 4095241984
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.44.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).

- for sub-test 9: RB8/TF3 (4x336)
- for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (4x336).
- for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (4x336).
- for sub-test 12,15,18,21,24,27,30,33,36,39,42: RB8/TF4 (8x336)
- for sub-test 13,16,19,22,25,28,31,34,37,40,43: RB5/TF1 (1x39) and RB8/TF4 (8x336).
- for sub-test 14,17,20,23,26,29,32,35,38,41,44: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (8x336).

3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.45 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:57.6 DL:57.6 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.45.1 Conformance requirement

See 14.2.4.1.

14.2.45.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.45.

14.2.45.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (57.6 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	2x576	N/A
	TF3, bits	N/A	N/A	N/A	3x576	N/A
	TF4, bits	N/A	N/A	N/A	4x576	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (57.6 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	2x576	N/A
	TF3, bits	N/A	N/A	N/A	3x576	N/A
	TF4, bits	N/A	N/A	N/A	4x576	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, , UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 576
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 576
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: No data RB6: No data RB7: No data RB8: 1152
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: 39 RB6: No data RB7: No data RB8: 1152
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 1152	RB5: 81 RB6: 103 RB7: 60 RB8: 1152
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: No data RB6: No data RB7: No data RB8: 1728
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: 39 RB6: No data RB7: No data RB8: 1728
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1728	RB5: 81 RB6: 103 RB7: 60 RB8: 1728
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 2304	RB5: No data RB6: No data RB7: No data RB8: 2304
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2304	RB5: 39 RB6: No data RB7: No data RB8: 2304
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2304	RB5: 81 RB6: 103 RB7: 60 RB8: 2304
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.45.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x576)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x576).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x576).
   - for sub-test 6: RB8/TF2 (2x576)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x576).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x576).
   - for sub-test 9: RB8/TF2 (3x576)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x576).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x576).
   - for sub-test 12: RB8/TF2 (4x576)
   - for sub-test 13: RB5/TF1 (1x39) and RB8/TF4 (4x576).
   - for sub-test 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x576).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.46 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.46.1 Conformance requirement

See 14.2.4.1.

14.2.46.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.46.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps,, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.46.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (14.4 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x320	0x148
	TF1, bits	1x39	1x103	1x60	1x320	1x148
	TF2, bits	1x81	N/A	N/A	2x320	N/A
	TF3, bits	N/A	N/A	N/A	4x320	N/A
	TF4, bits	N/A	N/A	N/A	8x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 320 (note 2)
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 320 (note 2)
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 320 (note 2)
6	DL_TFC6	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 5761~~152~~	RB5: No data RB6: No data RB7: No data RB8: 640 (note 3)
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 5761~~152~~	RB5: 39 RB6: No data RB7: No data RB8: 640 (note 3)
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 5761~~152~~	RB5: 81 RB6: 103 RB7: 60 RB8: 640 (note 3)
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 5761~~728~~	RB5: No data RB6: No data RB7: No data RB8: 1280 (note 4)
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 5761~~728~~	RB5: 39 RB6: No data RB7: No data RB8: 1280 (note 4)
11	DL_TFC11	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 5761~~728~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1280 (note 4)
12	DL_TFC12	UL_TFC3	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 5762~~880~~	RB5: No data RB6: No data RB7: No data RB8: 2560 (note 5)

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~2880~~	RB5: 39 RB6: No data RB7: No data RB8: 2560 (note 5)
14	DL_TFC14	UL_TFC5	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~2880~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2560 (note 5)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: RB8: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.
NOTE 3: RB8: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one~~two~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2~~.
NOTE 4: RB8: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one~~three~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3~~.
NOTE 5: RB8: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one~~five~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5~~.

See 14.1.1 for test procedure.

14.2.46.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 4, 7, 10 and 13: RB5/TF1 (1x39).
   - for sub-test 2, 5, 8, 11 and 14: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
   - for sub-test 3, 6, 9 and 12: no data on RB5, RB6 and RB7.
   - for sub-test 1, 4, 7, 10 and 13: an RLC SDU on RB5 having the same content as sent by the SS; and no data shall be received on RB6 or RB7.
   - for sub-test 2, 5, 8, 11 and 14: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by the SS.
   - for sub-test 1 to 2: no data on RB8.
   - for sub-test 3 to 5~~14~~: an RLC SDU on RB8 having the same content as sent by the SS.
   - for sub-test 6 to 14: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

14.2.47 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:0 DL:128 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.47.1 Conformance requirement

See 14.2.4.1.

14.2.47.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.47.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 128 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.47.3 Method of test

Uplink TFS:

	TFI	**RB5 (RAB subflow #1)**	**RB6 (RAB subflow #2)**	**RB7 (RAB subflow #3)**	**RB8 (14.4 kbps)**	**DCCH**
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	**(RB5, RB6, RB7, RB8, DCCH)**
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	**RB6 (RAB subflow #2)**	**RB7 (RAB subflow #3)**	**RB8 (128 kbps)**	**DCCH**
TFS	TF0, bits	1x0	0x103	0x60	0x320	0x148
	TF1, bits	1x39	1x103	1x60	1x320	1x148
	TF2, bits	1x81	N/A	N/A	2x320	N/A
	TF3, bits	N/A	N/A	N/A	4x320	N/A
	TF4, bits	N/A	N/A	N/A	8x320	N/A
	TF5, bits	N/A	N/A	N/A	16x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF0, TF1)
DL_TFC19	(TF1, TF0, TF0, TF0, TF1)
DL_TFC20	(TF2, TF1, TF1, TF0, TF1)
DL_TFC21	(TF0, TF0, TF0, TF1, TF1)
DL_TFC22	(TF1, TF0, TF0, TF1, TF1)
DL_TFC23	(TF2, TF1, TF1, TF1, TF1)
DL_TFC24	(TF0, TF0, TF0, TF2, TF1)
DL_TFC25	(TF1, TF0, TF0, TF2, TF1)
DL_TFC26	(TF2, TF1, TF1, TF2, TF1)
DL_TFC27	(TF0, TF0, TF0, TF3, TF1)
DL_TFC28	(TF1, TF0, TF0, TF3, TF1)
DL_TFC29	(TF2, TF1, TF1, TF3, TF1)
DL_TFC30	(TF0, TF0, TF0, TF4, TF1)
DL_TFC31	(TF1, TF0, TF0, TF4, TF1)
DL_TFC32	(TF2, TF1, TF1, TF4, TF1)
DL_TFC33	(TF0, TF0, TF0, TF5, TF1)
DL_TFC34	(TF1, TF0, TF0, TF5, TF1)
DL_TFC35	(TF2, TF1, TF1, TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 320 (note 2)
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 320 (note 2)
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 320 (note 2)
6	DL_TFC6	UL_TFC3	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~1152~~	RB5: No data RB6: No data RB7: No data RB8: 640 (note 3)
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~1152~~	RB5: 39 RB6: No data RB7: No data RB8: 640 (note 3)
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~1152~~	RB5: 81 RB6: 103 RB7: 60 RB8: 640 (note 3)
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~1728~~	RB5: No data RB6: No data RB7: No data RB8: 1280 (note 4)
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~1728~~	RB5: 39 RB6: No data RB7: No data RB8: 1280 (note 4)
11	DL_TFC11	UL_TFC5	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~1728~~	RB5: 81 RB6: 103 RB7: 60 RB8: 1280 (note 4)
12	DL_TFC12	UL_TFC3	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~2880~~	RB5: No data RB6: No data RB7: No data RB8: 2560 (note 5)

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 5762~~2880~~	RB5: 39 RB6: No data RB7: No data RB8: 2560 (note 5)
14	DL_TFC14	UL_TFC5	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 5762~~2880~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2560 (note 5)
15	DL_TFC15	UL_TFC3	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 5765~~5184~~	RB5: No data RB6: No data RB7: No data RB8: 5120 (note 6)
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 5765~~5184~~	RB5: 39 RB6: No data RB7: No data RB8: 5120 (note 6)
17	DL_TFC17	UL_TFC5	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 5765~~5184~~	RB5: 81 RB6: 103 RB7: 60 RB8: 5120 (note 6)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: RB8: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return 1 RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.
NOTE 3: RB8: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one~~2~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2~~.
NOTE 4: RB8: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one~~3~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3~~.
NOTE 5: RB8: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one~~5~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5~~.
NOTE 6: RB8: SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return one~~9~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, … ,RLC PDU#8 and the first 512 bits of RLC PDU#9~~.

See 14.1.1 for test procedure.

14.2.47.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 4, 7, 10, 13 and 16: RB5/TF1 (1x39).
   - for sub-test 2, 5, 8, 11, 14 and 17: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
   - for sub-test 3, 6, 9, 12 and 15: no data on RB5, RB6 and RB7.
   - for sub-test 1, 4, 7, 10, 13 and 16: an RLC SDU on RB5 having the same content as sent by the SS; and no data shall be received on RB6 or RB7.

- for sub-test 2, 5, 8, 11, 14 and 17: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by the SS.
- for sub-test 1 to 2: no data on RB8.
- for sub-test 3 to 5~~17~~: an RLC SDU on RB8 having the same content as sent by the SS.
- for sub-test 6 to 17: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

14.2.48 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:0 DL:384 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.48.1 Conformance requirement

See 14.2.4.1.

14.2.48.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.48.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 384 kbps,, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.48.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (14.4 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x320	0x148
	TF1, bits	1x39	1x103	1x60	1x320	1x148
	TF2, bits	1x81	N/A	N/A	2x320	N/A
	TF3, bits	N/A	N/A	N/A	4x320	N/A
	TF4, bits	N/A	N/A	N/A	8x320	N/A
	TF5, bits	N/A	N/A	N/A	16x320	N/A
	TF6, bits	N/A	N/A	N/A	32x320	N/A
	TF7, bits	N/A	N/A	N/A	48x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF0, TF1)
DL_TFC25	(TF1, TF0, TF0, TF0, TF1)
DL_TFC26	(TF2, TF1, TF1, TF0, TF1)
DL_TFC27	(TF0, TF0, TF0, TF1, TF1)
DL_TFC28	(TF1, TF0, TF0, TF1, TF1)
DL_TFC29	(TF2, TF1, TF1, TF1, TF1)
DL_TFC30	(TF0, TF0, TF0, TF2, TF1)
DL_TFC31	(TF1, TF0, TF0, TF2, TF1)
DL_TFC32	(TF2, TF1, TF1, TF2, TF1)
DL_TFC33	(TF0, TF0, TF0, TF3, TF1)
DL_TFC34	(TF1, TF0, TF0, TF3, TF1)
DL_TFC35	(TF2, TF1, TF1, TF3, TF1)
DL_TFC36	(TF0, TF0, TF0, TF4, TF1)
DL_TFC37	(TF1, TF0, TF0, TF4, TF1)
DL_TFC38	(TF2, TF1, TF1, TF4, TF1)
DL_TFC39	(TF0, TF0, TF0, TF5, TF1)
DL_TFC40	(TF1, TF0, TF0, TF5, TF1)
DL_TFC41	(TF2, TF1, TF1, TF5, TF1)
DL_TFC42	(TF0, TF0, TF0, TF6, TF1)
DL_TFC43	(TF1, TF0, TF0, TF6, TF1)
DL_TFC44	(TF2, TF1, TF1, TF6, TF1)
DL_TFC45	(TF0, TF0, TF0, TF7, TF1)
DL_TFC46	(TF1, TF0, TF0, TF7, TF1)

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC47	(TF2, TF1, TF1, TF7, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 320 (note 2)
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 320 (note 2)
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 320 (note 2)
6	DL_TFC6	UL_TFC3	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~1~~152	RB5: No data RB6: No data RB7: No data RB8: 640 (note 3)
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~1~~152	RB5: 39 RB6: No data RB7: No data RB8: 640 (note 3)
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~1~~152	RB5: 81 RB6: 103 RB7: 60 RB8: 640 (note 3)
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~1~~728	RB5: No data RB6: No data RB7: No data RB8: 1280 (note 4)
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~1~~728	RB5: 39 RB6: No data RB7: No data RB8: 1280 (note 4)
11	DL_TFC11	UL_TFC5	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~1~~728	RB5: 81 RB6: 103 RB7: 60 RB8: 1280 (note 4)
12	DL_TFC12	UL_TFC3	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~2~~880	RB5: No data RB6: No data RB7: No data RB8: 2560 (note 5)

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~2880~~	RB5: 39 RB6: No data RB7: No data RB8: 2560 (note 5)
14	DL_TFC14	UL_TFC5	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~2880~~	RB5: 81 RB6: 103 RB7: 60 RB8: 2560 (note 5)
15	DL_TFC15	UL_TFC3	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~5184~~	RB5: No data RB6: No data RB7: No data RB8: 5120 (note 6)
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~5184~~	RB5: 39 RB6: No data RB7: No data RB8: 5120 (note 6)
17	DL_TFC17	UL_TFC5	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~5184~~	RB5: 81 RB6: 103 RB7: 60 RB8: 5120 (note 6)
18	DL_TFC18	UL_TFC3	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~10368~~	RB5: No data RB6: No data RB7: No data RB8: 10240 (note 7)
19	DL_TFC19	UL_TFC4	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~10368~~	RB5: 39 RB6: No data RB7: No data RB8: 10240 (note 7)
20	DL_TFC20	UL_TFC5	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~10368~~	RB5: 81 RB6: 103 RB7: 60 RB8: 10240 (note 7)
21	DL_TFC21	UL_TFC3	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~15552~~	RB5: No data RB6: No data RB7: No data RB8: 15360 (note 8)

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
22	DL_TFC22	UL_TFC4	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576~~15552~~	RB5: 39 RB6: No data RB7: No data RB8: 15360 (note 8)
23	DL_TFC23	UL_TFC5	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576~~15552~~	RB5: 81 RB6: 103 RB7: 60 RB8: 15360 (note 8)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: RB8: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return 1 RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.
NOTE 3: RB8: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one~~2~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2~~.
NOTE 4: RB8: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one~~3~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3~~.
NOTE 5: RB8: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one~~5~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5~~.
NOTE 6: RB8: SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return one~~9~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, ... ,RLC PDU#8 and the first 512 bits of RLC PDU#9~~.
NOTE 7: RB8: SS is using a DL RLC SDU size of 10240 bits as test data (=DL RLC PDU size for DL/TF6). UE will return one~~18~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#17 and the first 448 bits of RLC PDU#18~~.
NOTE 8: RB8: SS is using a DL RLC SDU size of 15360 bits as test data (=DL RLC PDU size for DL/TF7). UE will return one~~27~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#26 and the first 384 bits of RLC PDU#27~~.

See 14.1.1 for test procedure.

14.2.48.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 4, 7, 10, 13, 16, 19 and 22: RB5/TF1 (1x39).
   - for sub-test 2, 5, 8, 11, 14, 17, 20 and 23: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
   - for sub-test 3, 6, 9, 12, 15, 18 and 21: no data on RB5, RB6 and RB7.
   - for sub-test 1, 4, 7, 10, 13, 16, 19 and 22: an RLC SDU on RB5 having the same content as sent by the SS; and no data shall be received on RB6 or RB7.
   - for sub-test 2, 5, 8, 11, 14, 17, 20 and 23: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by the SS.
   - for sub-test 1 to 2: no data on RB8.
   - for sub-test 3 to 5~~23~~: an RLC SDU on RB8 having the same content as sent by the SS.

- for sub-test 6 to 23: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

14.2.49 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.49.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI

14.2.49.1.1 Conformance requirement

See 14.2.4.1.

14.2.49.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.49 for the 20 ms TTI case.

14.2.49.1.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB8):

Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	2x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	2x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 1280	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 1280	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1280	RB5: No data RB6: No data RB7: No data RB8: 1280
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1280	RB5: 39 RB6: No data RB7: No data RB8: 1280
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1280	RB5: 81 RB6: 103 RB7: 60 RB8: 1280
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.49.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).

- for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
- for sub-test 3: RB8/TF1 (2x640)
- for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (2x640).
- for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (2x640).

3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.49.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI

14.2.49.2.1 Conformance requirement

See 14.2.4.1.

14.2.49.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.49 for the 40 ms TTI case.

14.2.49.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB8):

Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	4x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	4x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 2560	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 2560	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 2560	RB5: No data RB6: No data RB7: No data RB8: 2560
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 2560	RB5: 39 RB6: No data RB7: No data RB8: 2560
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 2560	RB5: 81 RB6: 103 RB7: 60 RB8: 2560
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.49.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (4x640)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (2x640).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (4x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.50 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.50.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI

14.2.50.1.1 Conformance requirement

See 14.2.4.1.

14.2.50.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.50 for the 20 ms TTI case.

14.2.50.1.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5 and RB6):

	RB5 (64 kbps)	RB6 (64 kbps)
Uplink RLC TM RLC Segmentation indication	TRUE	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE	TRUE

Uplink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	2x640	2x640	1x148
	TF2, bits	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF0, TF1, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF1, TF0, TF1)
UL_TFC6	(TF0, TF1, TF1)
UL_TFC7	(TF1, TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	2x640	2x640	1x148
	TF2, bits	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF0, TF1, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF0, TF1)
DL_TFC5	(TF1, TF0, TF1)
DL_TFC6	(TF0, TF1, TF1)
DL_TFC7	(TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 1280 RB6: 1280	RB5: 1280 RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 1280 RB6: 1280	RB5: No data RB6: 1280
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC3, UL_TFC4, UL_TFC7	RB5: 1280 RB6: 1280	RB5: 1280 RB6: 1280
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.50.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (2x640).
   - for sub-test 2: RB6/TF1 (2x640).
   - for sub-test 3: RB5/TF1 (2x640); RB6/TF1 (2x640)
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.

- for sub-test 3: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.50.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 40 ms TTI

14.2.50.2.1 Conformance requirement

See 14.2.4.1.

14.2.50.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.50 for the 40 ms TTI case.

14.2.50.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5 and RB6):

	RB5 (64 kbps)	RB6 (64 kbps)
Uplink RLC TM RLC Segmentation indication	TRUE	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE	TRUE

Uplink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	4x640	4x640	1x148
	TF2, bits	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF0, TF1, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF1, TF0, TF1)
UL_TFC6	(TF0, TF1, TF1)
UL_TFC7	(TF1, TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	4x640	4x640	1x148
	TF2, bits	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF0, TF1, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF0, TF1)
DL_TFC5	(TF1, TF0, TF1)
DL_TFC6	(TF0, TF1, TF1)
DL_TFC7	(TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 2560 RB6: 2560	RB5: 2560 RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 2560 RB6: 2560	RB5: No data RB6: 2560
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC3, UL_TFC4, UL_TFC7	RB5: 2560 RB6: 2560	RB5: 2560 RB6: 2560
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.50.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (4x640).
   - for sub-test 2: RB6/TF1 (4x640).
   - for sub-test 3: RB5/TF1 (4x640); RB6/TF1 (4x640)
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
   - for sub-test 3: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.51 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.51.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:64 DL:64 kbps / PS RAB

14.2.51.1.1 Conformance requirement

See 14.2.4.1.

14.2.51.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 20 ms TTI case.

14.2.51.1.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	RB5 (Conv. 64 kbps)
Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 1280 RB6: ~~336~~312	RB5: No data RB6: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 1280 RB6: ~~672~~632	RB5: No data RB6: ~~672~~632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 1280 RB6: ~~1008~~952	RB5: No data RB6: ~~1008~~952
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~43~~, UL_TFC10, UL_TFC14	RB5: 1280 RB6: 1272~~1344~~	RB5: No data RB6: ~~1344~~1272
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~51~~, UL_TFC10, UL_TFC15	RB5: 1280 RB6: 312~~336~~	RB5: 1280 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~61~~, UL_TFC10, UL_TFC16	RB5: 1280 RB6: 312~~336~~	RB5: 1280 RB6: 312~~336~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~72~~, UL_TFC10, UL_TFC17	RB5: 1280 RB6: 632~~672~~	RB5: 1280 RB6: ~~672~~632
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~83~~, UL_TFC10, UL_TFC18	RB5: 1280 RB6: 952~~1008~~	RB5: 1280 RB6: 952~~1008~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~93~~, UL_TFC10, UL_TFC19	RB5: 1280 RB6: 1272~~1344~~	RB5: 1280 RB6: 1272~~1344~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.51.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (3x336).
   - for sub-test 4 and 9: RB6/TF1 (4x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (2x640)
3. At step 15 the UE shall return
   - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.

- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.51.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:64 DL:64 kbps / PS RAB

14.2.51.2.1 Conformance requirement

See 14.2.4.1.

14.2.51.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 40 ms TTI case.

14.2.51.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	RB5 (Conv. 64 kbps)
Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 2560 RB6: 312~~336~~	RB5: No data RB6: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 2560 RB6: 632~~672~~	RB5: No data RB6: ~~672~~632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 2560 RB6: 952~~1008~~	RB5: No data RB6: ~~1008~~952
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~43~~, UL_TFC10, UL_TFC14	RB5: 2560 RB6: 1344	RB5: No data RB6: 1344
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~51~~, UL_TFC10, UL_TFC15	RB5: 2560 RB6: 312~~336~~	RB5: 2560 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~61~~, UL_TFC10, UL_TFC16	RB5: 2560 RB6: 312~~336~~	RB5: 2560 RB6: 312~~336~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~72~~, UL_TFC10, UL_TFC17	RB5: 2560 RB6: 632~~672~~	RB5: 2560 RB6: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~83~~, UL_TFC10, UL_TFC18	RB5: 2560 RB6: 952~~1008~~	RB5: 2560 RB6: 952~~1008~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~93~~, UL_TFC10, UL_TFC19	RB5: 2560 RB6: 1272~~1344~~	RB5: 2560 RB6: ~~1344~~1272
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.51.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (3x336).
   - for sub-test 4 and 9: RB6/TF1 (4x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (4x640)

3. At step 15 the UE shall return

   - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.

   - for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

   - for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.52 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.52.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:64 DL:128 kbps / PS RAB

14.2.52.1.1 Conformance requirement

See 14.2.4.1.

14.2.52.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.52 for the 20 ms TTI case.

14.2.52.1.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	RB5 (Conv. 64 kbps)
Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)

TFCI	(RB5, RB6, DCCH)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 1280 RB6: 312~~336~~	RB5: No data RB6: 312~~336~~
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 1280 RB6: 632~~672~~	RB5: No data RB6: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 1280 RB6: 1272~~1344~~	RB5: No data RB6: ~~1344~~1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~43~~, UL_TFC10, UL_TFC14	RB5: 1280 RB6: 2552~~2688~~	RB5: No data RB6: 2552~~2688~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~51~~, UL_TFC10, UL_TFC15	RB5: 1280 RB6: 312~~336~~	RB5: 1280 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~61~~, UL_TFC10, UL_TFC16	RB5: 1280 RB6: 312~~336~~	RB5: 1280 RB6: 312~~336~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~72~~, UL_TFC10, UL_TFC17	RB5: 1280 RB6: 632~~672~~	RB5: 1280 RB6: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~83~~, UL_TFC10, UL_TFC18	RB5: 1280 RB6: 1272~~1344~~	RB5: 1280 RB6: 1272~~1344~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~93~~, UL_TFC10, UL_TFC19	RB5: 1280 RB6: 2552~~2688~~	RB5: 1280 RB6: 2552~~2688~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.52.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (3x336).
   - for sub-test 4 and 9: RB6/TF1 (4x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (2x640)

3. At step 15 the UE shall return

   - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.

   - for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

   - for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.52.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:64 DL:128 kbps / PS RAB

14.2.52.2.1 Conformance requirement

See 14.2.4.1.

14.2.52.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 40 ms TTI case.

14.2.52.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	RB5 (Conv. 64 kbps)
Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 2560 RB6: 312~~336~~	RB5: No data RB6: ~~336~~312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 2560 RB6: 632~~672~~	RB5: No data RB6: ~~672~~632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 2560 RB6: 1272~~1344~~	RB5: No data RB6: ~~1344~~1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~43~~, UL_TFC10, UL_TFC14	RB5: 2560 RB6: 2552~~2688~~	RB5: No data RB6: 2552~~2688~~
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~51~~, UL_TFC10, UL_TFC15	RB5: 2560 RB6: 312~~336~~	RB5: 2560 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~61~~, UL_TFC10, UL_TFC16	RB5: 2560 RB6: 312~~336~~	RB5: 2560 RB6: 312~~336~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~72~~, UL_TFC10, UL_TFC17	RB5: 2560 RB6: 632~~672~~	RB5: 2560 RB6: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~83~~, UL_TFC10, UL_TFC18	RB5: 2560 RB6: 1272~~1344~~	RB5: 2560 RB6: 1272~~1344~~
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~93~~, UL_TFC10, UL_TFC19	RB5: 2560 RB6: 2552~~2688~~	RB5: 2560 RB6: 2552~~2688~~
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.52.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (3x336).
   - for sub-test 4 and 9: RB6/TF1 (4x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (4x640)
3. At step 15 the UE shall return
   - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.

- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.53 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:128 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.53.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:128 DL:128 kbps / PS RAB

14.2.53.1.1 Conformance requirement

See 14.2.4.1.

14.2.53.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.53 for the 20 ms TTI case.

14.2.53.1.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	RB5 (Conv. 64 kbps)
Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 1280640 RB6: 312336	RB5: No data RB6: 336312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 1280 RB6: 632672	RB5: No data RB6: 672632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 1280 RB6: 12721344	RB5: No data RB6: 13441272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC43, UL_TFC10, UL_TFC14	RB5: 1280 RB6: 25522688	RB5: No data RB6: 25522688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC51, UL_TFC10, UL_TFC15	RB5: 1280 RB6: 312336	RB5: 1280 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC61, UL_TFC10, UL_TFC16	RB5: 1280 RB6: 312336	RB5: 1280 RB6: 312336
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC72, UL_TFC10, UL_TFC17	RB5: 1280 RB6: 632672	RB5: 1280 RB6: 632672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC83, UL_TFC10, UL_TFC18	RB5: 1280 RB6: 12721344	RB5: 1280 RB6: 12721344
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC93, UL_TFC10, UL_TFC19	RB5: 1280 RB6: 25522688	RB5: 1280 RB6: 25522688
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.53.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (4x336).
   - for sub-test 4 and 9: RB6/TF1 (8x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (2x640)
3. At step 15 the UE shall return
   - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.

- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.53.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:128 DL:128 kbps / PS RAB

14.2.53.2.1 Conformance requirement

See 14.2.4.1.

14.2.53.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.53 for the 40 ms TTI case.

14.2.53.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	RB5 (Conv. 64 kbps)
Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	~~2x640~~4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	~~2x640~~4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 2560 RB6: 312~~336~~	RB5: No data RB6: ~~336~~312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 2560 RB6: ~~672~~632	RB5: No data RB6: 632~~672~~
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 2560 RB6: 1272~~1~~344	RB5: No data RB6: 1272~~1~~344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~4~~3, UL_TFC10, UL_TFC14	RB5: 2560 RB6: 2552~~2~~688	RB5: No data RB6: 2552~~2~~688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5~~1~~, UL_TFC10, UL_TFC15	RB5: 2560 RB6: ~~336~~312	RB5: 2560 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC6~~1~~, UL_TFC10, UL_TFC16	RB5: 2560 RB6: 312~~336~~	RB5: 2560 RB6: 312~~336~~
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC7~~2~~, UL_TFC10, UL_TFC17	RB5: 2560 RB6: 632~~672~~	RB5: 2560 RB6: 632~~672~~
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC8~~3~~, UL_TFC10, UL_TFC18	RB5: 2560 RB6: 1272~~1~~344	RB5: 2560 RB6: 1272~~1~~344
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC9~~3~~, UL_TFC10, UL_TFC19	RB5: 2560 RB6: 2552~~2~~688	RB5: 2560 RB6: 2552~~2~~688
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.53.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (4x336).
   - for sub-test 4 and 9: RB6/TF1 (8x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (4x640)

3. At step 15 the UE shall return

   - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.

   - for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

   - for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.54 Interactive or background / UL:64 DL:128 kbps / PS RAB + Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.54.1 Conformance requirement

See 14.2.4.1.

14.2.54.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.54.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.54.3 Method of test

Uplink TFS:

	TFI	**RB5 (I/B 64 kbps)**	**RB6 (Str. 14.4 kbps)**	**DCCH**
TFS	TF0, bits	0x336	0x576	0x148
	TF1, bits	1x336	1x576	1x148
	TF2, bits	2x336	N/A	N/A
	TF3, bits	3x336	N/A	N/A
	TF4, bits	4x336	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF0, TF0)
UL_TFC3	(TF3, TF0, TF0)
UL_TFC4	(TF4, TF0, TF0)
UL_TFC5	(TF0, TF1, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF2, TF1, TF0)
UL_TFC8	(TF3, TF1, TF0)
UL_TFC9	(TF4, TF1, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF1, TF0, TF1)
UL_TFC12	(TF2, TF0, TF1)
UL_TFC13	(TF3, TF0, TF1)
UL_TFC14	(TF4, TF0, TF1)
UL_TFC15	(TF0, TF1, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF2, TF1, TF1)
UL_TFC18	(TF3, TF1, TF1)
UL_TFC19	(TF4, TF1, TF1)

Downlink TFS:

	TFI	RB5 (I/B 128 kbps)	RB6 (Str. 64 kbps)	DCCH
TFS	TF0, bits	0x336	0x320	0x148
	TF1, bits	1x336	1x320	1x148
	TF2, bits	2x336	2x320	N/A
	TF3, bits	4x336	4x320	N/A
	TF4, bits	8x336	8x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF0, TF0)
DL_TFC3	(TF3, TF0, TF0)
DL_TFC4	(TF4, TF0, TF0)
DL_TFC5	(TF0, TF1, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF2, TF1, TF0)
DL_TFC8	(TF3, TF1, TF0)
DL_TFC9	(TF4, TF1, TF0)
DL_TFC10	(TF0, TF2, TF0)
DL_TFC11	(TF1, TF2, TF0)
DL_TFC12	(TF2, TF2, TF0)
DL_TFC13	(TF3, TF2, TF0)
DL_TFC14	(TF4, TF2, TF0)
DL_TFC15	(TF0, TF3, TF0)
DL_TFC16	(TF1, TF3, TF0)
DL_TFC17	(TF2, TF3, TF0)
DL_TFC18	(TF3, TF3, TF0)
DL_TFC19	(TF4, TF3, TF0)
DL_TFC20	(TF0, TF4, TF0)
DL_TFC21	(TF1, TF4, TF0)
DL_TFC22	(TF2, TF4, TF0)
DL_TFC23	(TF3, TF4, TF0)
DL_TFC24	(TF4, TF4, TF0)

TFCI	(RB5, RB6, DCCH)
DL_TFC25	(TF0, TF0, TF1)
DL_TFC26	(TF1, TF0, TF1)
DL_TFC27	(TF2, TF0, TF1)
DL_TFC28	(TF3, TF0, TF1)
DL_TFC29	(TF4, TF0, TF1)
DL_TFC30	(TF0, TF1, TF1)
DL_TFC31	(TF1, TF1, TF1)
DL_TFC32	(TF2, TF1, TF1)
DL_TFC33	(TF3, TF1, TF1)
DL_TFC34	(TF4, TF1, TF1)
DL_TFC35	(TF0, TF2, TF1)
DL_TFC36	(TF1, TF2, TF1)
DL_TFC37	(TF2, TF2, TF1)
DL_TFC38	(TF3, TF2, TF1)
DL_TFC39	(TF4, TF2, TF1)
DL_TFC40	(TF0, TF3, TF1)
DL_TFC41	(TF1, TF3, TF1)
DL_TFC42	(TF2, TF3, TF1)
DL_TFC43	(TF3, TF3, TF1)
DL_TFC44	(TF4, TF3, TF1)
DL_TFC45	(TF0, TF4, TF1)
DL_TFC46	(TF1, TF4, TF1)
DL_TFC47	(TF2, TF4, TF1)
DL_TFC48	(TF3, TF4, TF1)
DL_TFC49	(TF4, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 312~~336~~ RB6: 576	RB5: 312~~336~~ RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 632~~672~~ RB6: 576	RB5: ~~672~~632 RB6: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: ~~1344~~1272 RB6: 576	RB5: ~~1344~~1272 RB6: No data
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4~~3~~, UL_TFC10, UL_TFC14	RB5: 2552~~2688~~ RB6: 576	RB5: 2552~~2688~~ RB6: No data
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5~~1~~, UL_TFC10, UL_TFC15	RB5: ~~336~~312 RB6: 576	RB5: No data RB6: 320 (note 2)
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC6~~1~~, UL_TFC10, UL_TFC16	RB5: ~~336~~312 RB6: 576	RB5: ~~336~~312 RB6: 320 (note 2)
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC7~~2~~, UL_TFC10, UL_TFC17	RB5: 632~~672~~ RB6: 576	RB5: 632~~672~~ RB6: 320 (note 2)
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC8~~3~~, UL_TFC10, UL_TFC18	RB5: ~~1344~~1272 RB6: 576	RB5: ~~1344~~1272 RB6: 320 (note 2)

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC93, UL_TFC10, UL_TFC19	RB5: 25522688 RB6: 576	RB5: 25522688 RB6: 320 (note 2)
10	DL_TFC10	UL_TFC5	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC51, UL_TFC10, UL_TFC15	RB5: 336312 RB6: 5761152	RB5: No data RB6: 640 (note 3)
11	DL_TFC11	UL_TFC6	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC61, UL_TFC10, UL_TFC16	RB5: 336312 RB6: 5761152	RB5: 336312 RB6: 640 (note 3)
12	DL_TFC12	UL_TFC7	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC72, UL_TFC10, UL_TFC17	RB5: 632672 RB6: 5761152	RB5: 632672 RB6: 640 (note 3)
13	DL_TFC13	UL_TFC8	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC83, UL_TFC10, UL_TFC18	RB5: 13441272 RB6: 5761152	RB5: 13441272 RB6: 640 (note 3)
14	DL_TFC14	UL_TFC9	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC93, UL_TFC10, UL_TFC19	RB5: 25522688 RB6: 5761152	RB5: 25522688 RB6: 640 (note 3)
15	DL_TFC15	UL_TFC5	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC51, UL_TFC10, UL_TFC15	RB5: 336312 RB6: 5761728	RB5: No data RB6: 1280 (note 4)
16	DL_TFC16	UL_TFC6	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC61, UL_TFC10, UL_TFC16	RB5: 336312 RB6: 5761728	RB5: 336312 RB6: 1280 (note 4)
17	DL_TFC17	UL_TFC7	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC72, UL_TFC10, UL_TFC17	RB5: 632672 RB6: 5761728	RB5: 632672 RB6: 1280 (note 4)
18	DL_TFC18	UL_TFC8	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC83, UL_TFC10, UL_TFC18	RB5: 13441272 RB6: 5761728	RB5: 13441272 RB6: 1280 (note 4)
19	DL_TFC19	UL_TFC9	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC93, UL_TFC10, UL_TFC19	RB5: 25522688 RB6: 5761728	RB5: 25522688 RB6: 1280 (note 4)
20	DL_TFC20	UL_TFC5	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC51, UL_TFC10, UL_TFC15	RB5: 336312 RB6: 5762880	RB5: No data RB6: 2560 (note 5)
21	DL_TFC21	UL_TFC6	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC61, UL_TFC10, UL_TFC16	RB5: 336312 RB6: 5762880	RB5: 336312 RB6: 2560 (note 5)
22	DL_TFC22	UL_TFC7	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC72, UL_TFC10, UL_TFC17	RB5: 632672 RB6: 5762880	RB5: 632672 RB6: 2560 (note 5)

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
23	DL_TFC23	UL_TFC8	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC83, UL_TFC10, UL_TFC18	RB5: 13441272 RB6: 5762880	RB5: 13441272 RB6: 2560 (note 5)
24	DL_TFC24	UL_TFC9	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC93, UL_TFC10, UL_TFC19	RB5: 26882552 RB6: 5762880	RB5: 25522688 RB6: 2560 (note 5)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: RB6: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.
NOTE 3: RB6: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one~~two~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2~~.
NOTE 4: RB6: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one~~three~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3~~.
NOTE 5: RB6: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one~~five~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5~~.

See 14.1.1 for test procedure.

14.2.54.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 6, 11, 16 and 21: RB5/TF1 (1x336).
   - for sub-test 2, 7, 12, 17 and 22: RB5/TF1 (2x336).
   - for sub-test 3, 8, 13, 18 and 23: RB5/TF1 (3x336).
   - for sub-test 4, 9, 14, 19 and 24: RB5/TF1 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 19, 21, 22, 23 and 24: an RLC SDU on RB5 having the same content as sent by the SS.
   - for sub-test 5, 10, 15 and 20: no data shall be received on RB5.
   - for sub-test 1 to 4~~, 2, 3 and 4~~: no data shall be received on RB6.
   - for sub-test 5 to 9~~24~~: an RLC SDU on RB6 having the same content as sent by the SS.
   - for sub-test 10 to 24: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

14.2.55 Interactive or background / UL:64 DL:128 kbps / PS RAB + Streaming / unknown / UL:0 DL:128 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.55.1 Conformance requirement

See 14.2.4.1.

14.2.55.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.55.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.55.3 Method of test

Uplink TFS:

	TFI	RB5 (I/B 64 kbps)	RB6 (Str. 14.4 kbps)	DCCH
TFS	TF0, bits	0x336	0x576	0x148
	TF1, bits	1x336	1x576	1x148
	TF2, bits	2x336	N/A	N/A
	TF3, bits	3x336	N/A	N/A
	TF4, bits	4x336	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF0, TF0)
UL_TFC3	(TF3, TF0, TF0)
UL_TFC4	(TF4, TF0, TF0)
UL_TFC5	(TF0, TF1, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF2, TF1, TF0)
UL_TFC8	(TF3, TF1, TF0)
UL_TFC9	(TF4, TF1, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF1, TF0, TF1)
UL_TFC12	(TF2, TF0, TF1)
UL_TFC13	(TF3, TF0, TF1)
UL_TFC14	(TF4, TF0, TF1)
UL_TFC15	(TF0, TF1, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF2, TF1, TF1)
UL_TFC18	(TF3, TF1, TF1)
UL_TFC19	(TF4, TF1, TF1)

Downlink TFS:

	TFI	RB5 (I/B 128 kbps)	RB6 (Str. 128 kbps)	DCCH
TFS	TF0, bits	0x336	0x320	0x148
	TF1, bits	1x336	1x320	1x148
	TF2, bits	2x336	2x320	N/A
	TF3, bits	4x336	4x320	N/A
	TF4, bits	8x336	8x320	N/A
	TF5, bits	N/A	16x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF0, TF0)
DL_TFC3	(TF3, TF0, TF0)
DL_TFC4	(TF4, TF0, TF0)
DL_TFC5	(TF0, TF1, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF2, TF1, TF0)
DL_TFC8	(TF3, TF1, TF0)
DL_TFC9	(TF4, TF1, TF0)
DL_TFC10	(TF0, TF2, TF0)
DL_TFC11	(TF1, TF2, TF0)
DL_TFC12	(TF2, TF2, TF0)
DL_TFC13	(TF3, TF2, TF0)
DL_TFC14	(TF4, TF2, TF0)
DL_TFC15	(TF0, TF3, TF0)
DL_TFC16	(TF1, TF3, TF0)
DL_TFC17	(TF2, TF3, TF0)
DL_TFC18	(TF3, TF3, TF0)
DL_TFC19	(TF4, TF3, TF0)
DL_TFC20	(TF0, TF4, TF0)
DL_TFC21	(TF1, TF4, TF0)
DL_TFC22	(TF2, TF4, TF0)
DL_TFC23	(TF3, TF4, TF0)
DL_TFC24	(TF4, TF4, TF0)
DL_TFC25	(TF0, TF5, TF0)
DL_TFC26	(TF1, TF5, TF0)
DL_TFC27	(TF2, TF5, TF0)
DL_TFC28	(TF3, TF5, TF0)
DL_TFC29	(TF4, TF5, TF0)
DL_TFC30	(TF0, TF0, TF1)
DL_TFC31	(TF1, TF0, TF1)
DL_TFC32	(TF2, TF0, TF1)
DL_TFC33	(TF3, TF0, TF1)
DL_TFC34	(TF4, TF0, TF1)
DL_TFC35	(TF0, TF1, TF1)
DL_TFC36	(TF1, TF1, TF1)
DL_TFC37	(TF2, TF1, TF1)
DL_TFC38	(TF3, TF1, TF1)
DL_TFC39	(TF4, TF1, TF1)
DL_TFC40	(TF0, TF2, TF1)
DL_TFC41	(TF1, TF2, TF1)
DL_TFC42	(TF2, TF2, TF1)
DL_TFC43	(TF3, TF2, TF1)
DL_TFC44	(TF4, TF2, TF1)
DL_TFC45	(TF0, TF3, TF1)
DL_TFC46	(TF1, TF3, TF1)
DL_TFC47	(TF2, TF3, TF1)
DL_TFC48	(TF3, TF3, TF1)
DL_TFC49	(TF4, TF3, TF1)
DL_TFC50	(TF0, TF4, TF1)
DL_TFC51	(TF1, TF4, TF1)
DL_TFC52	(TF2, TF4, TF1)
DL_TFC53	(TF3, TF4, TF1)
DL_TFC54	(TF4, TF4, TF1)
DL_TFC55	(TF0, TF5, TF1)
DL_TFC56	(TF1, TF5, TF1)
DL_TFC57	(TF2, TF5, TF1)
DL_TFC58	(TF3, TF5, TF1)
DL_TFC59	(TF4, TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: ~~336~~312 RB6: 576	RB5: ~~336~~312 RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: ~~672~~632 RB6: 576	RB5: ~~672~~632 RB6: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: ~~1344~~1272 RB6: 576	RB5: ~~1344~~1272 RB6: No data
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC~~43~~, UL_TFC10, UL_TFC14	RB5: 2552~~2688~~ RB6: 576	RB5: ~~2688~~2552 RB6: No data
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5~~1~~, UL_TFC10, UL_TFC15	RB5: ~~336~~312 RB6: 576	RB5: No data RB6: 320 (note 2)
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC6~~1~~, UL_TFC10, UL_TFC16	RB5: ~~336~~312 RB6: 576	RB5: ~~336~~312 RB6: 320 (note 2)
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC7~~2~~, UL_TFC10, UL_TFC17	RB5: ~~672~~632 RB6: 576	RB5: ~~672~~632 RB6: 320 (note 2)
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC8~~3~~, UL_TFC10, UL_TFC18	RB5: ~~1344~~1272 RB6: 576	RB5: ~~1344~~1272 RB6: 320 (note 2)
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC9~~3~~, UL_TFC10, UL_TFC19	RB5: 2552~~2688~~ RB6: 576	RB5: 2552~~2688~~ RB6: 320 (note 2)
10	DL_TFC10	UL_TFC5	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5~~1~~, UL_TFC10, UL_TFC15	RB5: ~~336~~312 RB6: 576~~1152~~	RB5: No data RB6: 640 (note 3)
11	DL_TFC11	UL_TFC6	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC6~~1~~, UL_TFC10, UL_TFC16	RB5: ~~336~~312 RB6: 576~~1152~~	RB5: ~~336~~312 RB6: 640 (note 3)
12	DL_TFC12	UL_TFC7	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC7~~2~~, UL_TFC10, UL_TFC17	RB5: ~~672~~632 RB6: 576~~1152~~	RB5: ~~672~~632 RB6: 640 (note 3)
13	DL_TFC13	UL_TFC8	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC8~~3~~, UL_TFC10, UL_TFC18	RB5: ~~1344~~1272 RB6: 576~~1152~~	RB5: ~~1344~~1272 RB6: 640 (note 3)
14	DL_TFC14	UL_TFC9	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC9~~3~~, UL_TFC10, UL_TFC19	RB5: 2552~~2688~~ RB6: 576~~1152~~	RB5: 2552~~2688~~ RB6: 640 (note 3)
15	DL_TFC15	UL_TFC5	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5~~1~~, UL_TFC10, UL_TFC15	RB5: ~~336~~312 RB6: 576~~1728~~	RB5: No data RB6: 1280 (note 4)

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
16	DL_TFC16	UL_TFC6	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC61, UL_TFC10, UL_TFC16	RB5: 336312 RB6: 57611728	RB5: 336312 RB6: 1280 (note 4)
17	DL_TFC17	UL_TFC7	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC72, UL_TFC10, UL_TFC17	RB5: 672632 RB6: 57611728	RB5: 672632 RB6: 1280 (note 4)
18	DL_TFC18	UL_TFC8	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC83, UL_TFC10, UL_TFC18	RB5: 13441272 RB6: 57611728	RB5: 13441272 RB6: 1280 (note 4)
19	DL_TFC19	UL_TFC9	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC93, UL_TFC10, UL_TFC19	RB5: 25522688 RB6: 57611728	RB5: 25522688 RB6: 1280 (note 4)
20	DL_TFC20	UL_TFC5	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC51, UL_TFC10, UL_TFC15	RB5: 336312 RB6: 57612880	RB5: No data RB6: 2560 (note 5)
21	DL_TFC21	UL_TFC6	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC61, UL_TFC10, UL_TFC16	RB5: 336312 RB6: 57612880	RB5: 336312 RB6: 2560 (note 5)
22	DL_TFC22	UL_TFC7	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC72, UL_TFC10, UL_TFC17	RB5: 672632 RB6: 57612880	RB5: 672632 RB6: 2560 (note 5)
23	DL_TFC23	UL_TFC8	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC83, UL_TFC10, UL_TFC18	RB5: 13441272 RB6: 57612880	RB5: 13441272 RB6: 2560 (note 5)
24	DL_TFC24	UL_TFC9	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC93, UL_TFC10, UL_TFC19	RB5: 25522688 RB6: 57612880	RB5: 25522688 RB6: 2560 (note 5)
25	DL_TFC20	UL_TFC5	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC51, UL_TFC10, UL_TFC15	RB5: 336312 RB6: 57655184	RB5: No data RB6: 5120 (note 6)
26	DL_TFC21	UL_TFC6	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC61, UL_TFC10, UL_TFC16	RB5: 336312 RB6: 57655184	RB5: 336312 RB6: 5120 (note 6)
27	DL_TFC22	UL_TFC7	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC72, UL_TFC10, UL_TFC17	RB5: 672632 RB6: 57655184	RB5: 672632 RB6: 5120 (note 6)

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
28	DL_TFC23	UL_TFC8	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC83, UL_TFC10, UL_TFC18	RB5: 13441272 RB6: 5765184	RB5: 13441272 RB6: 5120 (note 6)
29	DL_TFC24	UL_TFC9	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC93, UL_TFC10, UL_TFC19	RB5: 25522688 RB6: 5765184	RB5: 25522688 RB6: 5120 (note 6)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: RB6: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.
NOTE 3: RB6: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one~~two~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2~~.
NOTE 4: RB6: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one~~three~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3~~.
NOTE 5: RB6: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one~~five~~ RLC PDUs. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5~~.
NOTE 6: RB6: SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return one~~nine~~ RLC PDU~~s~~. SS creates an UL RLC SDU from the received RLC PDU~~by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#8 and the first 512 bits of RLC PDU#9~~.

See 14.1.1 for test procedure.

14.2.55.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 6, 11, 16, 21 and 26: RB5/TF1 (1x336).
   - for sub-test 2, 7, 12, 17, 22 and 27: RB5/TF1 (2x336).
   - for sub-test 3, 8, 13, 18, 23 and 28: RB5/TF1 (3x336).
   - for sub-test 4, 9, 14, 19, 24 and 29: RB5/TF1 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 19, 21, 22, 23, 24, 26, 27, 28 and 29: an RLC SDU on RB5 having the same content as sent by the SS.
   - for sub-test 5, 10, 15, 20 and 25: no data shall be received on RB5.
   - for sub-test 1, 2, 3 and 4: no data shall be received on RB6.
   - for sub-test 5 to 9~~29~~: an RLC SDU on RB6 having the same content as sent by the SS.
   - for sub-test 10 to 29: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

14.3 Combinations on PDSCH and DPCH

14.3.1 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.3.1.1 Interactive or background / UL:64 DL:256 kbps / PS RAB / 10 ms TTI

14.3.1.1.1 Conformance requirement

See 14.2.4.1.

14.3.1.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.1 for the downlink 10 ms TTI case.

14.3.1.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (256 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 354	RB5: 354 (note 2)
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 708	RB5: 708 (note 3)
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1416	RB5: 1416 (note 4)
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2832	RB5: 2832 (note 5)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 354 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 18 bits of RLC PDU#2.
NOTE 3: SS is using a DL RLC SDU size of 708 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 36 bits of RLC PDU#2.
NOTE 4: SS is using a DL RLC SDU size of 1416 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 408 bits of RLC PDU#2.
NOTE 5: SS is using a DL RLC SDU size of 2832 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 144 bits of RLC PDU#3.

See 14.1.1 for test procedure.

14.3.1.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.1.2 Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

14.3.1.2.1 Conformance requirement

See 14.2.4.1.

14.3.1.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.1 for the downlink 20 ms TTI case.

14.3.1.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (256 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354
	DSCH_TF6, bits	16x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 354	RB5: 354 (note 2)
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 708	RB5: 708 (note 3)
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1416	RB5: 1416 (note 4)
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2832	RB5: 2832 (note 5)
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4248	RB5: 4248 (note 6)
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5664	RB5: 5664 (note 7)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 354 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 18 bits of RLC PDU#2.
NOTE 3: SS is using a DL RLC SDU size of 708 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 36 bits of RLC PDU#2.
NOTE 4: SS is using a DL RLC SDU size of 1416 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 408 bits of RLC PDU#2.
NOTE 5: SS is using a DL RLC SDU size of 2832 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 144 bits of RLC PDU#3.
NOTE 6: SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return four RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3 and the first 216 bits of RLC PDU#4.
NOTE 7: SS is using a DL RLC SDU size of 5664 bits as test data (=DL RLC PDU size for DL/DSCH_TF6). UE will return five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 288 bits of RLC PDU#5.

See 14.1.1 for test procedure.

14.3.1.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).

- for sub-test 2: RB5/TF2 (2x336).
- for sub-test 3: RB5/TF3 (3x336).
- for sub-test 4, 5 and 6: RB5/TF4 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1 to 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.2 Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.3.2.1 Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

14.3.2.1.1 Conformance requirement

See 14.2.4.1.

14.3.2.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.2 for the downlink 10 ms TTI case.

14.3.2.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_DSCH_ TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 354	RB5: 354 (note 2)
2	DL_DSCH_ TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 708	RB5: 708 (note 3)
3	DL_DSCH_ TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1416	RB5: 1416 (note 4)
4	DL_DSCH_ TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2832	RB5: 2832 (note 5)

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
5	DL_DSCH_ TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4248	RB5: 4248 (note 6)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 354 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 18 bits of RLC PDU#2.
NOTE 3: SS is using a DL RLC SDU size of 708 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 36 bits of RLC PDU#2.
NOTE 4: SS is using a DL RLC SDU size of 1416 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 408 bits of RLC PDU#2.
NOTE 5: SS is using a DL RLC SDU size of 2832 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 144 bits of RLC PDU#3.
NOTE 6: SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return four RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3 and the first 216 bits of RLC PDU#4.

See 14.1.1 for test procedure.

14.3.2.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4, 5 and 6: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.2.2 Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

14.3.2.2.1 Conformance requirement

See 14.2.4.1.

14.3.2.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.2 for the downlink 20 ms TTI case.

14.3.2.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354
	DSCH_TF6, bits	16x354
	DSCH_TF7, bits	20x354
	DSCH_TF8, bits	24x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 354	RB5: 354 (note 2)
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 708	RB5: 708 (note 3)
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1416	RB5: 1416 (note 4)
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2832	RB5: 2832 (note 5)
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4248	RB5: 4248 (note 6)
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5664	RB5: 5664 (note 7)
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7080	RB5: 7080 (note 8)

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
8	DL_DSCH_ TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 8496	RB5: 8496 (note 9)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 354 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 18 bits of RLC PDU#2.
NOTE 3: SS is using a DL RLC SDU size of 708 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 36 bits of RLC PDU#2.
NOTE 4: SS is using a DL RLC SDU size of 1416 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 408 bits of RLC PDU#2.
NOTE 5: SS is using a DL RLC SDU size of 2832 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 144 bits of RLC PDU#3.
NOTE 6: SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return four RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3 and the first 216 bits of RLC PDU#4.
NOTE 7: SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF6). UE will return five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#4 and the first 288 bits of RLC PDU#5.
NOTE 8: SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF7). UE will return six RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#5 and the first 360 bits of RLC PDU#6.
NOTE 9: SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF8). UE will return seven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#6 and the first 432 bits of RLC PDU#7.

See 14.1.1 for test procedure.

14.3.2.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4, 5, 6, 7 and 8: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.3 Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.3.3.1 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 10 ms TTI

14.3.3.1.1 Conformance requirement

See 14.2.4.1.

14.3.3.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.3 for the downlink 10 ms TTI case.

14.3.3.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x674
	DSCH_TF1, bits	1x674
	DSCH_TF2, bits	2x674
	DSCH_TF3, bits	4x674
	DSCH_TF4, bits	8x674
	DSCH_TF5, bits	12x674
	DSCH_TF6, bits	16x674
	DSCH_TF7, bits	20x674
	DSCH_TF8, bits	24x674
	DSCH_TF9, bits	28x674
	DSCH_TF10, bits	32x674

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8
DL_DSCH_TFC9	DSCH_TF9
DL_DSCH_TFC10	DSCH_TF10

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 674	RB5: 674 (note 2)
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1348	RB5: 1348 (note 3)
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2696	RB5: 2696 (note 4)
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5392	RB5: 5392 (note 5)
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 8088	RB5: 8088 (note 6)
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10784	RB5: 10784 (note 7)
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 13480	RB5: 13480 (note 8)
8	DL_DSCH_TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 16176	RB5: 16176 (note 9)

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
9	DL_DSCH_TFC9	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 18872	RB5: 18872 (note 10)
10	DL_DSCH_TFC10	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 21568	RB5: 21568 (note 11)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.
NOTE 2: SS is using a DL RLC SDU with 674 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 2 bits of RLC PDU#3.
NOTE 3: SS is using a DL RLC SDU size of 1348 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 4 bits of RLC PDU#3.
NOTE 4: SS is using a DL RLC SDU size of 2696 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 680 bits of RLC PDU#3.
NOTE 5: SS is using a DL RLC SDU size of 5392 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#4 and the first 16 bits of RLC PDU#5.
NOTE 6: SS is using a DL RLC SDU size of 8088 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return seven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#6 and the first 24 bits of RLC PDU#7.
NOTE 7: SS is using a DL RLC SDU size of 10784 bits as test data (=DL RLC PDU size for DL/DSCH_TF6). UE will return nine RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#8 and the first 32 bits of RLC PDU#9.
NOTE 8: SS is using a DL RLC SDU size of 13480 bits as test data (=DL RLC PDU size for DL/DSCH_TF7). UE will return eleven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#10 and the first 40 bits of RLC PDU#11.
NOTE 9: SS is using a DL RLC SDU size of 16176 bits as test data (=DL RLC PDU size for DL/DSCH_TF8). UE will return thirteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#12 and the first 48 bits of RLC PDU#13.
NOTE 10: SS is using a DL RLC SDU size of 18872 bits as test data (=DL RLC PDU size for DL/DSCH_TF9). UE will return fifteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#14 and the first 56 bits of RLC PDU#15.
NOTE 11: SS is using a DL RLC SDU size of 21568 bits as test data (=DL RLC PDU size for DL/DSCH_TF10). UE will return seventeen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#16 and the first 64 bits of RLC PDU#17.

See 14.1.1 for test procedure.

14.3.3.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4, 5, 6, 7, 8, 9 and 10: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.3.2 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 20 ms TTI

14.3.3.2.1 Conformance requirement

See 14.2.4.1.

14.3.3.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.3 for the downlink 20 ms TTI case.

14.3.3.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x674
	DSCH_TF1, bits	1x674
	DSCH_TF2, bits	2x674
	DSCH_TF3, bits	4x674
	DSCH_TF4, bits	8x674
	DSCH_TF5, bits	12x674
	DSCH_TF6, bits	16x674
	DSCH_TF7, bits	20x674
	DSCH_TF8, bits	24x674
	DSCH_TF9, bits	28x674
	DSCH_TF10, bits	32x674
	DSCH_TF11, bits	36x674
	DSCH_TF12, bits	40x674
	DSCH_TF13, bits	44x674
	DSCH_TF14, bits	48x674
	DSCH_TF15, bits	52x674
	DSCH_TF16, bits	56x674
	DSCH_TF17, bits	60x674
	DSCH_TF18, bits	64x674

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8
DL_DSCH_TFC9	DSCH_TF9
DL_DSCH_TFC10	DSCH_TF10
DL_DSCH_TFC11	DSCH_TF11
DL_DSCH_TFC12	DSCH_TF12
DL_DSCH_TFC13	DSCH_TF13
DL_DSCH_TFC14	DSCH_TF14
DL_DSCH_TFC15	DSCH_TF15
DL_DSCH_TFC16	DSCH_TF16
DL_DSCH_TFC17	DSCH_TF17
DL_DSCH_TFC18	DSCH_TF18

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 674	RB5: 674 (note 2)
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1348	RB5: 1348 (note 3)
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2696	RB5: 2696 (note 4)
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5392	RB5: 5392 (note 5)
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 8088	RB5: 8088 (note 6)
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10784	RB5: 10784 (note 7)
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 13480	RB5: 13480 (note 8)
8	DL_DSCH_TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 16176	RB5: 16176 (note 9)
9	DL_DSCH_TFC9	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 18872	RB5: 18872 (note 10)
10	DL_DSCH_TFC10	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 21568	RB5: 21568 (note 11)
11	DL_DSCH_TFC11	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 24264	RB5: 24264 (note 12)
12	DL_DSCH_TFC12	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 26960	RB5: 26960 (note 13)

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
13	DL_DSCH_TFC13	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 29656	RB5: 29656 (note 14)
14	DL_DSCH_TFC14	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 32352	RB5: 32352 (note 15)
15	DL_DSCH_TFC15	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 35048	RB5: 35048 (note 16)
16	DL_DSCH_TFC16	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 37744	RB5: 37744 (note 17)
17	DL_DSCH_TFC17	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 40440	RB5: 40440 (note 18)
18	DL_DSCH_TFC18	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 43136	RB5: 43136 (note 19)

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						
NOTE 2: SS is using a DL RLC SDU with 674 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 2 bits of RLC PDU#3.						
NOTE 3: SS is using a DL RLC SDU size of 1348 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 4 bits of RLC PDU#3.						
NOTE 4: SS is using a DL RLC SDU size of 2696 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 680 bits of RLC PDU#3.						
NOTE 5: SS is using a DL RLC SDU size of 5392 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#4 and the first 16 bits of RLC PDU#5.						
NOTE 6: SS is using a DL RLC SDU size of 8088 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return seven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#6 and the first 24 bits of RLC PDU#7.						
NOTE 7: SS is using a DL RLC SDU size of 10784 bits as test data (=DL RLC PDU size for DL/DSCH_TF6). UE will return nine RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#8 and the first 32 bits of RLC PDU#9.						
NOTE 8: SS is using a DL RLC SDU size of 13480 bits as test data (=DL RLC PDU size for DL/DSCH_TF7). UE will return eleven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#10 and the first 40 bits of RLC PDU#11.						
NOTE 9: SS is using a DL RLC SDU size of 16176 bits as test data (=DL RLC PDU size for DL/DSCH_TF8). UE will return thirteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#12 and the first 48 bits of RLC PDU#13.						
NOTE 10: SS is using a DL RLC SDU size of 18872 bits as test data (=DL RLC PDU size for DL/DSCH_TF9). UE will return fifteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#14 and the first 56 bits of RLC PDU#15.						
NOTE 11: SS is using a DL RLC SDU size of 21568 bits as test data (=DL RLC PDU size for DL/DSCH_TF10). UE will return seventeen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#16 and the first 64 bits of RLC PDU#17.						
NOTE 12: SS is using a DL RLC SDU size of 24264 bits as test data (=DL RLC PDU size for DL/DSCH_TF11). UE will return nineteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#18 and the first 72 bits of RLC PDU#19.						
NOTE 13: SS is using a DL RLC SDU size of 26960 bits as test data (=DL RLC PDU size for DL/DSCH_TF12). UE will return twenty-one RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#20 and the first 80 bits of RLC PDU#21.						
NOTE 14: SS is using a DL RLC SDU size of 29656 bits as test data (=DL RLC PDU size for DL/DSCH_TF13). UE will return twenty-three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#22 and the first 88 bits of RLC PDU#23.						
NOTE 15: SS is using a DL RLC SDU size of 32352 bits as test data (=DL RLC PDU size for DL/DSCH_TF14). UE will return twenty-five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#24 and the first 96 bits of RLC PDU#25.						
NOTE 16: SS is using a DL RLC SDU size of 35048 bits as test data (=DL RLC PDU size for DL/DSCH_TF15). UE will return twenty-seven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#26 and the first 104 bits of RLC PDU#27.						
NOTE 17: SS is using a DL RLC SDU size of 37744 bits as test data (=DL RLC PDU size for DL/DSCH_TF16). UE will return twenty-nine RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#28 and the first 112 bits of RLC PDU#29.						
NOTE 18: SS is using a DL RLC SDU size of 40440 bits as test data (=DL RLC PDU size for DL/DSCH_TF17). UE will return thirty-one RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#30 and the first 120 bits of RLC PDU#31.						
NOTE 19: SS is using a DL RLC SDU size of 43136 bits as test data (=DL RLC PDU size for DL/DSCH_TF18). UE will return thirty-three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#32 and the first 128 bits of RLC PDU#33.						

See 14.1.1 for test procedure.

14.3.3.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.

2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 to 18: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.3.4.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.4 for the downlink 10 ms TTI case.

14.3.4.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.4 for the downlink 20 ms TTI case.

14.3.5 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.3.5.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.5 for the downlink 10 ms TTI case.

14.3.5.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.5 for the downlink 20 ms TTI case.

14.3.6 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.3.6.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.6 for the downlink 10 ms TTI case.

14.3.6.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.6 for the downlink 20 ms TTI case.

14.4 Combinations on SCCPCH

14.4.1 Stand-alone signalling RB for PCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.1.

14.4.2 Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.2.

14.4.3 Interactive/Background 32 kbps RAB + SRBs for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.3.

14.5 Combinations on PRACH

14.5.1 Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.4.1.

3GPP TSG- T1 Meeting #13
Cancun, Mexico, 29-30 Nov 2001

TSG T1-010418

3GPP TSG- T1/SIG Meeting #20
Cancun, Mexico, 26-28 Nov 2001

TSG T1S-010313r1

CR-Form-v4

CHANGE REQUEST

⌘ **34.123-1** **CR** **125** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Update to SMS tests
Source:	⌘	DENSO CORPORATION
Work item code:	⌘	TEI
Date:	⌘	2001-11-26
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘ Correction of the replace mechanism test

Summary of change: ⌘ 1. Correction of the replace mechanism test

The Replace Short Message feature of 3GPP TS 23.040 had changed on and after release 98 in a way that the SC address is no longer checked (sub-clause 9.2.3.9).

It is being written in this core specification as follows;

- *If such a code is present, then the MS shall check the originating address and replace any existing stored message having the same Protocol Identifier code and originating address with the new short message and other parameter values. If there is no message to be replaced, the MS shall store the message in the normal way. The MS may also check the SC address as well as the Originating Address. However, in a network which has multiple SCs, it is possible for a Replace Message type for a SM to be sent via different SCs and so it is recommended that the SC address should not be checked by the MS unless the application specifically requires such a check.*

Therefore, it is unnecessary about all the test descriptions that check the SC address by MS (sub-clause 16.1.7 and 16.2.7).

Deletion of the description about using two different SC addresses (RP-OA1 and RP-OA2), in “Conformance requirement” (16.1.7.2 and 16.2.7.2), “Test procedure” (16.1.7.4 and 16.2.7.4) and “Expected sequence” (16.1.7.4 and 16.2.7.4)

		Deletion of step d) in “Test procedure” (16.1.7.4 and 16.2.7.4) Deletion of step 25 to 36 in “Expected sequence” (16.1.7.4 and 16.2.7.4) Deletion of the written description as “step 31”, in “Test procedure” (16.1.7.4 and 16.2.7.4) and “Test requirements” (16.1.7.5 and 16.2.7.5) 2. Editorial modifications After step **45** → After step **43** (sub-clause 16.2.2.5) After step **71** → After step **61** (sub-clause 16.2.2.5)
Consequences if not approved:	⌘	An inconsistency with the core specification will remain.

Clauses affected:	⌘	16.1.7, 16.2.2, 16.2,7		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Applicable to R99 and later releases		

How to create CRs using this form:
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http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<Start of modified section>

16.1.7 Test of the replace mechanism for SM type 1-7

16.1.7.1 Definition

16.1.7.2 Conformance requirement

On receipt of a short message, the UE shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code. If such a code is present, then the UE will check the associated ~~SC address (RP-OA) and~~ originating address (TP-OA) and replace any existing stored message having the same Protocol Identifier code~~, SC address~~ and originating address with the new short message.

Reference(s)

3GPP TS 23.040 clause 9.2.3.9.

16.1.7.3 Test purpose

This procedure verifies the correct implementation of the replace mechanism for Replace Short Messages.

16.1.7.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Test procedure

a) Two different numbers n and m are drawn randomly between 1 and 7. Two different addresses for TP-Originating-Address (TPOA1 and TPOA2) are drawn.~~ Two different addresses for RP-Originating-Address (RPOA1 and RPOA2) are drawn.~~

b) The SS delivers a short message to the UE as specified in clause 16.1.1 step a). In the SMS-DELIVER TPDU, the TP-Protocol-Identifier parameter is "Replace Short Message Type n", the TP-Originating-Address is TPOA1, and the RP-Originating-Address is RPOA~~1~~.

c) Step b) is repeated but with a different TP-Originating-Address (TPOA2), and different contents of TP-User-Data in the SMS-DELIVER TPDU. The other parameters are the same as in step b).

d) ~~Step c) is repeated but with RPOA2 in the RP-Originated-Address, and contents of TP-User-Data different from the former two messages. The other parameters are the same as in step c).~~

e) Step c~~d~~) is repeated but with the TP-Protocol-Identifier equal to "Replace Short Message Type m", and contents of TP-User-Data different from the former two~~three~~ messages. The other parameters are the same as in step c~~d~~).

f) Step e) is repeated but the contents of TP-User-Data are different from that used in step e).

g) The SS prompts the operator to indicate the Short Messages stored in the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA1 and RP-OA is RPOA~~1~~
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		PAGING RESPONSE	
15	<--		AUTHENTICATION REQUEST	
16	-->		AUTHENTICATION RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA~~1~~, TP-UD different from step 7
20	-->		CP-ACK	
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25			~~Mobile terminated establishment of Radio Resource Connection~~(void)	~~See 3GPP TS34.108~~
26	~~-->~~		~~PAGING RESPONSE~~(void)	
27	~~<--~~		~~AUTHENTICATION REQUEST~~(void)	
28	~~-->~~		~~AUTHENTICATION RESPONSE~~(void)	
29	~~<--~~		~~SECURITY MODE COMMAND~~(void)	
30	~~-->~~		~~SECURITY MODE COMPLETE~~(void)	
31	~~<--~~		~~CP-DATA~~(void)	~~Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 7 and 19~~
32	~~-->~~		~~CP-ACK~~(void)	
33	~~-->~~		~~CP-DATA~~(void)	~~Contains RP-ACK RPDU.~~
34	~~<--~~		~~CP-ACK~~(void)	
35	~~<--~~		~~RRC CONNECTION RELEASE~~(void)	
36	~~-->~~		~~RRC CONNECTION RELEASE COMPLETE~~(void)	
37			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
38	-->		PAGING RESPONSE	

Step	Direction		Message	Comments
	UE	SS		
39	<--		AUTHENTICATION REQUEST	
40	-->		AUTHENTICATION RESPONSE	
41	<--		SECURITY MODE COMMAND	
42	-->		SECURITY MODE COMPLETE	
43	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA~~2~~, TP-UD different from step 7~~, 19~~ and 19~~31~~
44	-->		CP-ACK	
45	-->		CP-DATA	Contains RP-ACK RPDU.
46	<--		CP-ACK	
47	<--		RRC CONNECTION RELEASE	
48	-->		RRC CONNECTION RELEASE COMPLETE	
49			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
50	-->		PAGING RESPONSE	
51	<--		AUTHENTICATION REQUEST	
52	-->		AUTHENTICATION RESPONSE	
53	<--		SECURITY MODE COMMAND	
54	-->		SECURITY MODE COMPLETE	
55	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA~~2~~, TP-UD different from step 43
56	-->		CP-ACK	
57	-->		CP-DATA	Contains RP-ACK RPDU.
58	<--		CP-ACK	
59	<--		RRC CONNECTION RELEASE	
60	-->		RRC CONNECTION RELEASE COMPLETE	
61	SS			Prompts the operator to indicate the Short Messages stored in the UE. Only the Short Messages delivered in step 7, 19~~, 31~~ and 55 shall be retrievable and indicated

Specific Message Contents

SMS-DELIVER TPDU

Information element	Comment Value
TP-MMS	no more messages are waiting in SC "1"B
TP-PID	binary 01000xxx, xxx represents n resp. m (see test method description)

16.1.7.5 Test requirements

After step 60 only the Short Messages delivered in step 7, 19~~, 31~~ and 55 shall be retrieved and indicated.

<End of modified section>

<Start of modified section>

16.2.2 SMS mobile originated

16.2.2.1 Definition

16.2.2.2 Conformance requirements

An active UE shall be able to submit short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is a PDP context in progress.

Reference

3GPP TS 23.040 clause 3.1.

16.2.2.3 Test purpose

To verify that the UE is able to correctly send a short message where the SMS is provided for the point to point service.

16.2.2.4 Method of test

Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty.

Related ICS/IXIT Statements

Support for Short message MO/PP.

Support for state PDP-ACTIVE of session management.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

Test procedure

a) The UE shall be set up to send a SM to the SS. The SS responds to RRC CONNECTION REQUEST by allocating a CCCH. The SS receives RRC CONNECTION SETUP COMPLETE on DCCH and then performs the authentication.

b) After receiving SECURITY MODE COMMAND UE shall send SECURITY COMMAND COMPLETE.

c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 s for the CP-ACK message.

d) The SS sends a channel release message to the UE.

e) Steps a) and b) are repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 s after the last CP-DATA retransmission the SS initiates channel release. The 5 s is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions.

f) Steps a) and b) are repeated. On receipt of the CP-DATA from the UE the SS sends a CP-ERROR message within TC1M containing a "Network Failure" cause. Then the SS initiates channel release.

g) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. The UE is set up to send an SM to the SS. After the reception of the SERVICE REQUEST, the SS sends a SERVICE ACCEPT message.

h) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 s for the CP-ACK message. Then the SS sends a channel release message to the UE.

i) Step g) is repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 s after the last CP-DATA retransmission the SS initiates channel release. The 15 s is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions (during a PDP context in progress).

j) (void)

k) The UE is set up to send an SM to the SS. On receipt of the SERVICE REQUEST the SS sends a SERVICE REJECT message with the reject cause set to "GPRS services not allowed". After 5 s the SS initiates channel release.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		SERVICE REQUEST	
6	<--		AUTHENTICATION AND CIPHERING REQUEST	
7	-->		AUTHENTICATION AND CIPHERING RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	<--		CP-ACK	Sent within TC1M after step 10
12	<--		CP-DATA	Contains RP-ACK RPDU
13	SS			Waits max 25 s for CP-ACK
14	-->		CP-ACK	
15	<--		RRC CONNECTION RELEASE	RRC connection is released.
16	-->		RRC CONNECTION RELEASE COMPLETE	
17	<--		SYSTEM INFORMATION	BCCH
18	-->		RRC CONNECTION REQUEST	CCCH
19	<--		RRC CONNECTION SETUP	CCCH
20	-->		RRC CONNECTION SETUP COMPLETE	DCCH
21	-->		SERVICE REQUEST	
22	<--		AUTHENTICATION AND CIPHERING REQUEST	
23	-->		AUTHENTICATION AND CIPHERING RESPONSE	
24	<--		SECURITY MODE COMMAND	
25	-->		SECURITY MODE COMPLETE	
26	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
27	SS			SS configured not to send CP-ACK

Step	Direction		Message	Comments
	UE	SS		
28	-->		CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 26
29	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 28 may be repeated. The maximum number of retransmissions may however not exceed three.
30	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1M + 5 s after the last CP-DATA retransmission.
31	-->		RRC CONNECTION RELEASE COMPLETE	
32	<--		SYSTEM INFORMATION	BCCH
33	-->		RRC CONNECTION REQUEST	CCCH
34	<--		RRC CONNECTION SETUP	CCCH
35	-->		RRC CONNECTION SETUP COMPLETE	DCCH
36	-->		SERVICE REQUEST	
37	<--		AUTHENTICATION AND CIPHERING REQUEST	
38	-->		AUTHENTICATION AND CIPHERING RESPONSE	
39	<--		SECURITY MODE COMMAND	
40	-->		SECURITY MODE COMPLETE	
41	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
42	<--		CP-ERROR	Sent within TC1M containing "Network Failure" cause.
43	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
44	-->		RRC CONNECTION RELEASE COMPLETE	
45	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
46	UE			The UE is set up to send an SM
47	-->		SERVICE REQUEST	
48	<--		SERVICE ACCEPT	
49	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
50	<--		CP-ACK	Sent within TC1M after step 49
51	<--		CP-DATA	Contains RP-ACK RPDU
52	SS			Waits max 25 s for CP-ACK
53	-->		CP-ACK	
54	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
55	-->		RRC CONNECTION RELEASE COMPLETE	
56	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
57	-->		SERVICE REQUEST	
58	<--		SERVICE ACCEPT	
59	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
60	SS			SS configured not to send CP-ACK
61	-->		CP-DATA	Transmitted CP-DATA message within twice TC1M after step 59
62	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 61 may be repeated. The maximum number of retransmissions may however not exceed three.
63	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1m + 15 s after the last CP-DATA retransmission.
64	-->		RRC CONNECTION RELEASE COMPLETE	
65-77			(void)	
78	-->		RRC CONNECTION REQUEST	initiate outgoing call
79	<--		RRC CONNECTION SETUP	
80	-->		RRC CONNECTION SETUP COMPLETE	
81	-->		SERVICE REQUEST	
82	<--		SERVICE REJECT	Reject cause set to "GPRS services not allowed"
83	<--		RRC CONNECTION RELEASE	Sent 5 s after SERVICE REJ
84	-->		RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.				

Specific Message Contents

SMS SUBMIT TPDU

Information element	CommentValue
TP-UDL TP-UD (140 octets max)	as applicable maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

16.2.2.5 Test requirements

After step 9 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 26 UE shall retransmit a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 43~~45~~ UE shall send the RRC CONNECTION RELEASE COMPLETE.

After step 48 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 61~~71~~ UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 82 UE shall not send CP-DATA.

<End of modified section>

<Start of modified section>

16.2.7 Test of the replace mechanism for SM type 1-7

16.2.7.1 Definition

16.2.7.2 Conformance requirement

On receipt of a short message, the UE shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code. If such a code is present, then the UE will check the associated ~~SC address (RP-OA) and~~ originating address (TP-OA) and replace any existing stored message having the same Protocol Identifier code~~, SC address~~ and originating address with the new short message.

Reference(s)

3GPP TS 23.040; clause 9.2.3.9.

16.2.7.3 Test purpose

This procedure verifies the correct implementation of the replace mechanism for Replace Short Messages.

16.2.7.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the UE message store shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Test procedure

a) Two different numbers n and m are drawn randomly between 1 and 7. Two different addresses for TP-Originating-Address (TPOA1 and TPOA2) are drawn.~~ Two different addresses for RP-Originating-Address (RPOA1 and RPOA2) are drawn.~~

b) The SS delivers a short message to the UE as specified in clause 16.2.1 step a). In the SMS-DELIVER TPDU, the TP-Protocol-Identifier parameter is "Replace Short Message Type n", the TP-Originating-Address is TPOA1, and the RP-Originating-Address is RPOA~~1~~.

c) Step b) is repeated but with a different TP-Originating-Address (TPOA2), and different contents of TP-User-Data in the SMS-DELIVER TPDU. The other parameters are the same as in step b).

d) ~~Step c) is repeated but with RPOA2 in the RP-Originated-Address, and contents of TP-User-Data different from the former two messages. The other parameters are the same as in step c).~~

e) Step c~~d)~~ is repeated but with the TP-Protocol-Identifier equal to "Replace Short Message Type m", and contents of TP-User-Data different from the former two~~three~~ messages. The other parameters are the same as in step c~~d~~).

f) Step e) is repeated but the contents of TP-User-Data are different from that used in step e).

g) The SS prompts the operator to indicate the Short Messages stored in the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA1 and RP-OA is RPOA~~1~~
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		SERVICE REQUEST	
15	<--		AUTHENTICATION AND CIPHERING REQUEST	
16	-->		AUTHENTICATION AND CIPHERING RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA1, TP-UD different from step 7
20	-->		CP-ACK	
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25			~~Mobile terminated establishment of Radio Resource Connection~~(void)	~~See 3GPP TS34.108~~
26	~~-->~~		~~SERVICE REQUEST~~(void)	
27	~~<--~~		~~AUTHENTICATION AND CIPHERING REQUEST~~(void)	
28	~~-->~~		~~AUTHENTICATION AND CIPHERING RESPONSE~~(void)	
29	~~<--~~		~~SECURITY MODE COMMAND~~(void)	
30	~~-->~~		~~SECURITY MODE COMPLETE~~(void)	
31	~~<--~~		~~CP-DATA~~(void)	~~Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 7 and 19~~
32	~~-->~~		~~CP-ACK~~(void)	
33	~~-->~~		~~CP-DATA~~(void)	~~Contains RP-ACK RPDU.~~
34	~~<--~~		~~CP-ACK~~(void)	
35	~~<--~~		~~RRC CONNECTION RELEASE~~(void)	

Step	Direction		Message	Comments
	UE	SS		
36	~~-->~~		~~RRC CONNECTION RELEASE COMPLETE~~(void)	
37			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
38	-->		SERVICE REQUEST	
39	<--		AUTHENTICATION AND CIPHERING REQUEST	
40	-->		AUTHENTICATION AND CIPHERING RESPONSE	
41	<--		SECURITY MODE COMMAND	
42	-->		SECURITY MODE COMPLETE	
43	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA~~2~~, TP-UD different from step 7~~, 19~~ and 19~~31~~
44	-->		CP-ACK	
45	-->		CP-DATA	Contains RP-ACK RPDU.
46	<--		CP-ACK	
47	<--		RRC CONNECTION RELEASE	
48	-->		RRC CONNECTION RELEASE COMPLETE	
49			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
50	-->		SERVICE REQUEST	
51	<--		AUTHENTICATION AND CIPHERING REQUEST	
52	-->		AUTHENTICATION AND CIPHERING RESPONSE	
53	<--		SECURITY MODE COMMAND	
54	-->		SECURITY MODE COMPLETE	
55	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA~~2~~, TP-UD different from step 43
56	-->		CP-ACK	
57	-->		CP-DATA	Contains RP-ACK RPDU.
58	<--		CP-ACK	
59	<--		RRC CONNECTION RELEASE	
60	-->		RRC CONNECTION RELEASE COMPLETE	
61	SS			Prompts the operator to indicate the Short Messages stored in the UE. Only the Short Messages delivered in step 7, 19~~, 31~~ and 55 shall be retrievable and indicated

Specific Message Contents

SMS-DELIVER TPDU

Information element	Comment Value
TP-MMS	no more messages are waiting in SC "1"B
TP-PID	binary 01000xxx, xxx represents n resp. m (see test method description)

16.2.7.5 Test requirements

After step 60 only the Short Messages delivered in step 7, 19~~, 31~~ and 55 shall be retrieved and indicated.

<End of modified section>

3GPP TSG-T1 SIG Meeting #13 ***T1-010419***
Cancun, Mexico, 29th – 30th November 2001

3GPP TSG-T1 SIG Meeting #20 ***T1S-010357r2***
Cancun, Mexico, 26th – 28th November 2001

CR-Form-v4

CHANGE REQUEST

⌘ **TS 34.123-1 CR 126** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Corrections to RRC test cases
Source:	⌘	MCI
Work item code:	⌘	TEI
Date:	⌘	28th November 01
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘ There are many technical errors found in the test proses.

Summary of change: ⌘ Test requirements in clause 8.1, 8.2.1 are updated to reflect more accurately the requirement of the UE.

References in many test cases are corrected.

Grammatical corrections.

Clarifications are made to improve the readability of the test proses.

Updating of the IEs according to June version TS 25.331.

In all multi-cells tables, all entries labeled CPICH RSCP are revised to CPICH Ec since these tables specify the DL TX power configured by SS, instead of the Rx power received by UE. The value of this parameter when the cell is not suitable for camping is –75dBm and the value is –60 dBm when the cell is suitable for camping.

All post amble test steps are removed.

Specific message content are clarified to ensure all IEs are clearly indicated. References of the specific message are also clarified.

Contents in the SIB type 5 used in clause 8.1.2.2 have been update according to those found in TS 34.108.

In clause 8.1 and 8.2.1, all reception of invalid RRC message test cases are revised to use short message to generate the invalid message.

In clause 8.1.1.5 and 8.1.1.6, the current test cases required UE to read SIB type 1 and 13 in CELL_PCH and URA_PCH state. This is not possible so the test cases are revised to

use SIB type 3 and 4 instead. In the revised test case, after UE read the new SIB type 3 and 4, UE will not respond to PAGING TYPE 1 message as the status of the cell is changed from “not barred” to “barred”. Clause 8.1.14 is also revised to be consistent with clause 8.1.1.5 and 8.1.1.6.

In clause 8.1.1.7 and 8.1.1.8, step 1, which is to test that the UE does not react to a PAGING TYPE 2 message with unmatch Paging Record Type Identifier, is removed because this test depends on what type of paging record type identifier the UE support.

Conformance requirement and test purpose of clause 8.1.1.7 is updated to include testing of UE’s behaviour when invalid PAGING TYPE 2 message is received.

In clause 8.1.2.2, one of the conformance requirements cannot be met so it is removed. The invalid RRC CONNECTION SETUP message in step 5 cannot cause variable PROTOCOL_ERROR_REJECT in the UE to be set to TRUE.

In clause 8.1.2.4, the transmisson power of both cells is specified. The IE “UARFCN uplink (Nu)” is set to the frequency used in cell 2. The conformance requirement is updated. In step 1, IE “Initial UE identity” should be set to IMSI stored in the TEST USIM.

In clause 8.1.2.5, in step 2, IE “Initial UE identity” should be set to IMSI stored in the TEST USIM.

In clause 8.1.2.6, the RRC CONNECTION REQUEST message in step 3 and 5 should be the same as in step 1.

In clause 8.1.2.7, “Originating Background Call” and “Orginating Streaming Call” can also be used as the establishment cause in the RRC CONNECTION REQUEST message.

Clause 8.1.2.8 is removed because this requirement does not exist in the core specification.

In clause 8.1.2.9, conformance requirement for invalid message reception is removed. This has been tested in another clause. Step 2 of the expected sequence has been revised and step 2a is added.

In clause 8.1.3.1, IE “Number of RRC Message Transmission” is replaced with IE “N308” and the range of value is corrected. In the test purpose, number of time RRC CONNECTION RELEASE message is transmitted is corrected to N308+1 times.

In step 4 of clause 8.1.6.1 and 8.1.6.2, RRC STATUS message need to include IE “Identification of received message type”.

In clause 8.1.6, in the test requirement, RRC STATUS message should not include IE “failure cause” as it is not in the message.

In clause 8.1.7.1, it is clarified in the conformance requirement that ciphering is for signalling radio bearers and any radio bearers, integrity protection is for signalling links only. Test purpose is also updated to include testing of UE when UE receives invalid SECURITY MODE COMMAND message.

In clause 8.1.7.2, testing of UE’s behaviour when UE performs cell re-selection procedure and ciphering as well as integrity protection is in used, has been removed. This is because it is very difficult for the SS to control the UE to complete cell-reselection procedure before it responds with SECURITY MODE COMPLETE message.

In clause 8.1.8, conformance requirement is updated to include testing of UE when UE receives invalid COUNTER CHECK message.

In clause 8.2.1, the applicability of many test cases is revised.

Clause 8.2.1.2 is removed because test for integrity is already included in clause 8.1.7.

In many test cases in clause 8.2.1, references of default messages are updated.

In clause 8.2.1.3, IE “UARFCN uplink (Nu)” in the unsupported configuration message is

	set to '0' and IE "UARFCN downlink (Nd)" is set to 950. This may not be the best solution but at least the test condition will not misled readers. In clause 8.2.1.5, the content of CELL UPDATE CONFIRM messge in step 4 is revised so that the UE returns to its initial state. In clause 8.2.1, all invalid configuration messages from SS to UE shall use the following setting: Default DPCH Offset Value 512 DPCH frame offset 1024 In clause 8.2.1.6 and 8.2.1.14, IE "Scrambling code number" is added to the RBC messages in step 1 and 2 but the values for both messages are different. In subsequently received test cases, IE "Scrambling code number" is added to the two same RBC messages subsequently sent from SS but the values for both messages are different. These changes apply to clause 8.2.1.17 and 8.2.1.18. In clause 8.2.1.19 and 8.2.1.20, IE "Primary scrambling code" is added to RADIO BEARER SETUP message in step 1. In cell re-select test cases (clause 8.2.1.9), the tests are modified to use only 1 cell. The RBC messages shall include IE "Primary CPICH info" which is set to the value of cell 2. Since cell 2 is not available, the UE shall re-select to cell 1 and then send a CELL UPDATE message with IE "Cell update cause" set to "cell reselection". In test cases where UE fails to revert back to old configuration (clause 8.2.1.13), the cell update cause should be "radio link failure". In cell-reselect test cases (clause 8.2.1.9), the CELL UPDATE CONFIRM messages are revised to exclude IE "New U-RNTI" and IE "New C-RNTI" so that UE shall not need to send back UTRAN MOBILITY INFORMATION message back to SS.
Consequences if not approved: ⌘	The test prose cannot test UE correctly.

Clauses affected:	⌘	Clause 8.1 and clause 8.2.1	
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘
Other comments:	⌘	Affects Rel'99 and Rel'4 UE test cases.	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8 Radio Resource Control RRC

8.1 RRC Connection Management Procedure

8.1.1 Paging

8.1.1.1 Paging for Connection in idle mode

8.1.1.1.1 Definition

8.1.1.1.2 Conformance requirement

In idle mode, UE monitors the paging occasions determined using parameters from SYSTEM INFORMATION BLOCK messages. When the UE receives a PAGING TYPE 1 message transmitted on PCCH during one of its assigned paging occasions, it shall attempt to establish an RRC connection.

Reference

3GPP TS 25.331 clause 8.1.2, 3GPP TS 25.211 clause 5.3.3.7, 3GPP TS 25.304 clause 8.

8.1.1.1.3 Test purpose

To confirm that the UE establishes an RRC connection after it receives a PAGING TYPE 1 message which includes IE "~~Paging Record~~UE identity"(~~UE identity~~in IE “Paging Record”) set to the IMSI of the UE.

8.1.1.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity (set to IMSI), depending on the CN domain(s) supported by the UE.

Test Procedure

SS transmits SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message, which includes an unmatched CN UE identity for the UE in the idle state. The UE shall not change its state. The SS transmits a PAGING TYPE 1 message, which includes a matched CN UE identity for the UE in the idle state. During transmission of PAGING TYPE 1 messages, SS selects the correct paging indicator on the PICH in order to allow the UE to respond to paging. Then the UE transmits an RRC CONNECTION REQUEST to the SS, the SS transmits an RRC CONNECTION SETUP to the UE. When the UE receives this message, the UE establishes an RRC connection and transmits an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		SYSTEM INFORMATION BLOCK TYPE 13 or SYSTEM INFORMATION BLOCK TYPE 1	Transmit these messages on the BCCH, in addition to the normal BCCH transmissions. See specific message contents.
2	←		PAGING TYPE 1	The SS transmits the message, which includes an unmatched identity (incorrect IMSI), and the UE does not change its state.
3	←		PAGING TYPE 1	The SS transmits the message, which includes a matched identity (test-SIM IMSI).
4	→		RRC CONNECTION REQUEST	
5	←		RRC CONNECTION SETUP	SS assigns DPCH resources to allow UE to establish an RRC connection.
6	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

SYSTEM INFORMATION BLOCK TYPE 1 (Step 1) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
CN common GSM-MAP NAS system information	Location Area Information (LAI)
CN domain system information list	
- CN domain system information	
- CN domain identity	Supported Domain (PS Domain or CS Domain)
- CHOICE CN Type	Supported CN type
- CN domain specific NAS system information	00 00(CS) or 1E 01(PS)
- CN domain specific DRX cycle length coefficient	7
UE Timers and constants in idle mode	
- T300	4000 milliseconds
- N300	3
- T312	10 seconds
- N312	200

SYSTEM INFORMATION TYPE 13 (Step 1) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
CN domain system information list	Only 1 entry
CN domain system information	
- CN domain identity	Supported Domain (PS Domain or CS Domain)
- CHOICE CN Type	Supported CN type
- CN domain specific NAS system information	Default
- CN domain specific DRX cycle length coefficient	6
UE Timers and constants in idle mode	
- T300	6000 milliseconds
- N300	3
- T312	10 sec
- N312	200

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
CHOICE Used paging identity	CN identity
- Paging cause	Terminating Call with one of the supported services
- CN domain identity	Supported Domain (PS Domain or CS Domain)
- CHOICE UE Identity	IMSI
- IMSI	Set to an arbitrary octet string of length 7 bytes which is different from the IMSI value stored in the TEST USIM card.
BCCH modification info	Not Present

PAGING TYPE 1 (Step 3)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
CHOICE Used paging identity	CN identity
- Paging cause	Terminating Call with one of the supported services
- CN domain identity	Supported Domain (PS Domain or CS Domain)
- CHOICE UE Identity	IMSI
- IMSI	Set to the same octet string as in the IMSI stored in the TEST USIM card
BCCH modification info	Not Present

RRC CONNECTION REQUEST (Step 4)

Information Element	**Value/remark**
Message type	
Initial UE identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI
Establishment Cause	Check to see if it is set to the same value as "Paging Cause" IE in the PAGING TYPE 1 message transmitted on step 3.
Protocol Error Indicator	Check to see if it is set to FALSE
Measured results on RACH	Not checked.

8.1.1.1.5 Test requirement

After step 2 the UE shall not transmit on the uplink CCCH in order to establish a RRC connection.

After step 5 the UE shall have an RRC connection based on dedicated physical channel resources and transmit an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

8.1.1.2 Paging for Connection in connected mode (CELL_PCH)

8.1.1.2.1 Definition

8.1.1.2.2 Conformance requirement

In CELL_PCH state, a UE can respond to a paging request from UTRAN. In this case, the UTRAN has requested to establish a connection with the UE. The UE shall then attempt to perform a cell update procedure and move to CELL_FACH state in order to respond to the paging using uplink CCCH.

Reference

3GPP TS 25.331 clause 8.1.2.

8.1.1.2.3 Test purpose

To confirm that the UE enters the CELL_FACH state after it receives a PAGING TYPE 1 message which indicates that the paging has originated from UTRAN. To verify that the UE performs cell update procedure after entering the CELL_FACH state.

8.1.1.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH state (state 6-12) as specified in clause 7.4 of TS 34.108, ~~depending on the CN domain(s) supported by the UE~~ with a valid U-RNTI already assigned by the SS.

Test Procedure

SS transmits SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message, which includes an unmatched U-RNTI ~~in CELL_PCH state~~. The UE does not change its state. Then SS transmits a PAGING TYPE 1 message with a matched identifier but originates from the CN instead of UTRAN. The UE shall not change state after receiving this message. The SS transmits a PAGING TYPE 1 message, which includes a matched U-RNTI ~~in the connected state~~. Then the UE enters the CELL_FACH state and performs the cell updating procedure.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SYSTEM INFORMATION BLOCK TYPE 13 or SYSTEM INFORMATION BLOCK TYPE 1	Transmit these messages on the BCCH, in addition to the normal BCCH transmissions. See specific message contents
2		←	PAGING TYPE 1	The SS transmits a message including an unmatched identifier. UE shall not respond to the paging.
3		←	PAGING TYPE 1	The SS transmits a message includes a matched identifier but with the originator being the CN, UE shall not respond to the paging.
4		←	PAGING TYPE 1	The SS transmits the message with the UTRAN being the originator and including the UE's assigned U-RNTI
5		→	CELL UPDATE	The UE enters the CELL_FACH state. UE performs cell updating procedure. The CELL UPDATE message shall contain the value "Cell Update Cause" set to "paging response".
6		←	CELL UPDATE CONFIRM	Use the default message specified in Annex A.

Specific Message Contents

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Set to an arbitrary 16-bit string which is different from the SRNC identity assigned.
- S-RNTI	Set to an arbitrary 20-bit string which is different from the S-RNTI assigned.
BCCH modification info	Not Present

PAGING TYPE 1 (Step 3)

Same as the PAGING TYPE 1 message as in step 3 of ~~Clause~~ clause 8.1.1.1.4~~, with the exception that the "BCCH modification info" IE shall be omitted in the message~~.

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Set to the same SRNC identity as previously assigned.
- S-RNTI	Set to the same S-RNTI as previously assigned.
BCCH modification info	Not Present

SYSTEM INFORMATION BLOCK TYPE 13

Use the same SYSTEM INFORMATION BLOCK TYPE 13 message as specified in clause 8.1.1.1.4.

SYSTEM INFORMATION BLOCK TYPE 1

Use the same SYSTEM INFORMATION BLOCK TYPE 1 message as specified in clause 8.1.1.1.4.

8.1.1.2.5 Test requirement

After step 2 the UE shall not respond to the PAGING TYPE 1 message sent in step 2.

After step 3 the UE shall not respond to the PAGING TYPE 1 message sent in step ~~2~~3.

After step 4 the UE shall enter the CELL FACH state and send a CELL UPDATE message with "Cell Update Cause" IE set to "paging response".

After step 6 the UE shall be in the CELL_FACH state.

8.1.1.3 Paging for Connection in connected mode (URA_PCH)

8.1.1.3.1 Definition

8.1.1.3.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 1 message from the network to selected UEs in URA_PCH state using the paging control channel (PCCH). The UE listens to it and then enters the CELL_FACH state.

Reference

3GPP TS 25.331 clause 8.1.2.

8.1.1.3.3 Test purpose

To confirm that the UE enters the CELL_FACH state after it receives a PAGING TYPE 1 message ~~which includes IE "Paging Record"(U-RNTI) for the UE and~~ which is set to "UTRAN ~~originator~~identity" in IE "Used paging ~~originator~~identity" and the U-RNTI value assigned to UE in the IE “U-RNTI”.

8.1.1.3.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: URA_PCH state (state 6-13) as specified in clause 7.4 of TS 34.108, ~~depending on the CN domain(s) supported by the UE~~ with a valid U-RNTI assigned by the SS.

Test Procedure

The SS transmits a PAGING TYPE 1 message, which includes an unmatched U-RNTI ~~in URA_PCH state~~. The UE does not change its current state. The SS transmits a PAGING TYPE 1 message which includes a matched U-RNTI ~~in the connected state~~. Then the UE listens to it and enters the CELL_FACH state to transmit a CELL UPDATE message using uplink CCCH in respond to the paging.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	The SS transmits the message that includes an unmatched identifier, ~~then~~ but ~~the~~ UE does not change its state.
2		←	PAGING TYPE 1	The SS transmits the message that includes a matched identifier.
3		→	CELL UPDATE	The UE enters the CELL_FACH state.
4		←	CELL UPDATE CONFIRM	Use the default message specified in Annex A.

Specific Message Contents

PAGING TYPE 1 (Step 1)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Set to an unused SRNC identity which is different from the SRNC identity assigned.
- S-RNTI	Set to an arbitrary 20-bit string which is different from the S-RNTI assigned.
BCCH modification info	Not Present

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Set to the previously assigned SRNC identity
- S-RNTI	Set to previously assigned S-RNTI
BCCH modification info	Not Present

8.1.1.3.5 Test requirement

After step 1 the UE shall not respond to the paging.

After step 2 the UE shall enter the CELL FACH state, and transmit CELL UPDATE message to initiate the cell updating procedure with the paging cause set to "paging response".

After step 4 the UE shall be in the CELL_FACH state.

8.1.1.4 Paging for Notification in idle mode

8.1.1.4.1 Definition

8.1.1.4.2 Conformance requirement

When a system information block on the BCCH is modified, the PAGING TYPE 1 message can be sent on the PCCH to inform ~~the~~ UE in the idle mode about the changes, which are currently taking place ~~in the idle mode~~. The PAGING TYPE 1 message includes the IE "BCCH Modification Information". Upon receiving this notification from the UTRAN, the UE shall read the relevant MIB and/or SIB(s) subsequently during idle mode.

Reference

3GPP TS 25.331 clause 8.1. ~~1.~~2.

8.1.1.4.3 Test purpose

To confirm that the UE checks the new value tag of the master information block and reads the updated SYSTEM INFORMATION BLOCK messages after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

8.1.1.4.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity, depending on the CN domain(s) supported by the UE.

Test Procedure

~~The UE is in the idle state before SS starts to change the SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE.~~ The SS transmits a PAGING TYPE 1 message on the paging occasions assigned to the UE. The message shall include the IE "BCCH Modification Information" indicating the time when the first modified master information block is available. Before the starting time, SS continuously broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on the BCCH mapped to BCH transport channel. SS maintains this status until the SFN which corresponds to the ~~starting~~ modification time is reached. Then it transmits the new master information block followed by the new SYSTEM INFORMATION BLOCK TYPE ~~1~~ 3 ~~or~~and ~~13~~ 4 messages. In the new SIB TYPE ~~1 or 13~~3 and 4 messages, the IE "~~DRX Cycle Length Coefficient~~Cell Access Restriction" is ~~altered~~ different when compared to the original SIB TYPE ~~1 or 13~~3 and 4 messages. At the next paging occasion, SS transmits a new PAGING TYPE 1 message. ~~The~~ This message addresses the UE using its IMSI and the "paging cause" IE set to a terminating call type that is supported by the UE. The UE shall consider the cell as barred and not ~~react~~respond to the PAGING TYPE 1 message~~ and then send a RRC CONNECTION REQUEST message to SS~~.

~~NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	~~←~~		~~MASTER INFORMATION BLOCK~~ ~~SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13~~ Void	~~SS transmits information on BCCH in order for UE to listen to one of the S-CCPCH physical channel, which carries PAGING TYPE 1 or 13 messages on PCCH. Relevant paging parameters are also broadcasted.~~
2	←		PAGING TYPE 1	SS transmits the message includes the IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
3	←		MASTER INFORMATION BLOCK	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting.
	←		SYSTEM INFORMATION BLOCK TYPE ~~1 or SYSTEM INFORMATION BLOCK TYPE 13~~3 and 4	At the same time, SS starts to transmit the affected SIB TYPE ~~1~~ 3 ~~or~~ and TYPE ~~13~~ 4 messages continuously. The ~~value of~~ IE "~~DRX Cycle Length Coefficient~~Cell Access Restriction" is changed ~~in this message~~from “Not barred” to “Barred”. SS starts to monitor the uplink RACH after approximately 4087 frames from step 2.
4	←		PAGING TYPE 1	SS starts to transmit this message continuously on the PCCH ~~according to the new value of "DRX Cycle Length Coefficient", at the next paging occasion immediately following step 3~~at the correct paging occasion.
~~5~~	~~→~~		~~RRC CONNECTION REQUEST~~	The UE shall not transmit an RRC CONNECTION REQUEST message.~~UE transmits a request due to answer to the PAGING TYPE 1 received in step 4. The IE "Establishment Cause" shall be set to "Terminating Call" supported by the UE and the "Initial UE Identity" set to UE's IMSI.~~
~~6~~	~~←~~		~~RRC CONNECTION REJECT~~	~~UE shall return to idle mode after receiving this message~~

Specific Message Contents

~~SYSTEM INFORMATION BLOCK TYPE 1 (Step 1) – for UEs supporting GSM-MAP core networks~~

~~Information Element~~	~~Value/remark~~
~~CN common GSM-MAP NAS system information~~	
~~CN domain system information list~~	~~Location Area Information (LAI)~~
~~- CN domain system information~~	~~Supports both CS and PS domains~~
~~- CN domain identity~~	
~~- CHOICE CN Type~~	~~CS domain~~
~~- CN domain specific NAS system information~~	~~00 00~~
	~~7~~
~~- CN domain specific DRX cycle length coefficient~~	
~~- CN domain system information~~	~~PS domain~~
~~- CN domain identity~~	~~1E 01~~
~~- CHOICE CN Type~~	~~7~~
~~- CN domain specific NAS system information~~	
	~~4000 milliseconds~~
~~- CN domain specific DRX cycle length coefficient~~	~~7~~
~~UE Timers and constants in idle mode~~	~~10 seconds~~
~~- T300~~	~~200~~
~~- N300~~	~~Not Present~~
~~- T312~~	
~~- N312~~	
~~UE Timers and constants in connected mode~~	

~~SYSTEM INFORMATION BLOCK TYPE 13 (Step 1) – for UEs supporting ANSI-41 core networks~~

~~Information Element~~	~~Value/remark~~
~~CN domain system information list~~	~~Supports both CS and PS domains~~
~~CN domain system information~~	
~~- CN domain identity~~	~~CS~~
~~- CHOICE CN Type~~	~~ANSI-41~~
~~- CN domain specific NAS system information~~	
~~- ANSI-41 NAS System Information~~	
~~- ANSI-41 NAS Parameter~~	~~Set to an ANSI-41 user zone information~~
~~- CN domain specific DRX cycle length coefficient~~	~~12~~
~~- CN domain identity~~	~~PS~~
~~- CHOICE CN Type~~	~~ANSI-41~~
~~- CN domain specific NAS system information~~	
~~- ANSI-41 NAS System Information~~	
~~- ANSI-41 NAS Parameter~~	~~Set to an ANSI-41 user zone information~~
~~- CN domain specific DRX cycle length coefficient~~	~~12~~
~~UE Capability update requirement~~	~~Not Present~~

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Not Present
BCCH modification info	
MIB Value Tag	2
BCCH Modification time	4088

MASTER INFORMATION BLOCK (Step 3)

Information Element	Value/remark
MIB Value tag	2

SYSTEM INFORMATION BLOCK TYPE ~~1~~ 3 and 4 (Step 3) ~~– for UEs supporting GSM-MAP core networks~~

Information Element	Value/remark
- Cell Access Restriction	
- Cell barred	Barred
- Intra-frequency cell re-selection indicator	not allowed
- T_{barred}	10
- Cell Reserved for operator use	Not reserved
- Cell Reservation Extension	Not reserved
- Access Class Barred List	
- Access Class Barred0	Barred
- Access Class Barred1	Barred
- Access Class Barred2	Barred
- Access Class Barred3	Barred
- Access Class Barred4	Barred
- Access Class Barred5	Barred
- Access Class Barred6	Barred
- Access Class Barred7	Barred
- Access Class Barred8	Barred
- Access Class Barred9	Barred
- Access Class Barred10	Barred
- Access Class Barred11	Barred
- Access Class Barred12	Barred
- Access Class Barred13	Barred
- Access Class Barred14	Barred
- Access Class Barred15	Barred
~~References to other system information blocks~~	~~Not Present~~
~~CN common GSM-MAP NAS system information~~	~~Location Area Information (LAI)~~
~~CN domain system information list~~	~~Supports both CS and PS domains~~
~~- CN domain system information~~	
~~- CN domain identity~~	~~CS domain~~
~~- CHOICE CN Type~~	~~00 00~~
~~- CN domain specific NAS system information~~	~~6~~
~~- CN domain specific DRX cycle length coefficient~~	~~PS domain~~
~~- CN domain system information~~	~~1E 01~~
~~- CN domain identity~~	~~6~~
~~- CHOICE CN Type~~	
~~- CN domain specific NAS system information~~	~~4000 milliseconds~~
	~~6~~
~~- CN domain specific DRX cycle length coefficient~~	~~10 seconds~~
~~UE Timers and constants in idle mode~~	~~200~~
~~- T300~~	~~Not Present~~
~~- N300~~	
~~- T312~~	
~~- N312~~	
~~UE Timers and constants in connected mode~~	

~~SYSTEM INFORMATION BLOCK TYPE 13 (Step 3) – for UEs supporting ANSI-41 core networks~~

~~Information Element~~	~~Value/remark~~
~~References to other system information blocks~~	~~Not Present~~
~~CN domain system information list~~	~~Supports both CS and PS domains~~
~~CN domain system information~~	
~~- CN domain identity~~	~~CS domain~~
~~- CHOICE CN Type~~	~~ANSI-41~~
~~- CN domain specific NAS system information~~	
~~- ANSI-41 NAS system information~~	
~~- ANSI-41 NAS Parameter~~	~~Set to an ANSI-41 user zone information~~
~~- CN domain specific DRX cycle length coefficient~~	~~6~~
~~- CN domain identity~~	~~PS domain~~
~~- CHOICE CN Type~~	~~ANSI-41~~
~~- CN domain specific NAS system information~~	
~~- ANSI-41 NAS system information~~	
~~- ANSI-41 NAS Parameter~~	~~Set to an ANSI-41 user zone information~~
~~- CN domain specific DRX cycle length coefficient~~	~~6~~

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	CN identity
- Paging Cause	Terminating Call with one of the supported services
- CN Domain Identity	Supported Domain (PS Domain or CS Domain)
- CHOICE UE Identity	IMSI
- IMSI	Set to the same octet string as in the IMSI value stored in the TEST USIM card
BCCH modification info	Not Present

~~RRC CONNECTION REJECT (Step 6)~~

~~Information Element~~	~~Value/remark~~
~~Initial UE identity~~	
~~- CHOICE UE id type~~	~~IMSI~~
~~- IMSI~~	~~Set to the same octet string as in the IMSI value stored in the TEST USIM card~~
~~Rejection cause~~	~~Unspecified~~
~~Wait time~~	~~0~~
~~Redirection info~~	~~Not Present~~

8.1.1.4.5 Test requirement

After step ~~5~~ 4 the UE shall not transmit RRC CONNECTION REQUEST messages in response to the PAGING TYPE 1 messages sent in step 4.

8.1.1.5 Paging for Notification in connected mode (CELL_PCH)

8.1.1.5.1 Definition

8.1.1.5.2 Conformance requirement

When a system information block on the BCCH is modified, the message PAGING TYPE 1 can be sent on the PCCH to inform ~~the~~ UE in the CELL_PCH state about this change ~~in the CELL_PCH state~~. This message includes the IE "BCCH Modification Information". Upon receiving this notification from the UTRAN, the UE shall read the relevant MIB and/or SIB(s) subsequently while in CELL_PCH state.

Reference

3GPP TS 25.331 clause 8.1. ~~1.~~2.

8.1.1.5.3 Test purpose

To confirm that the UE ~~enters the CELL_FACH state~~, checks the new value tag of the master information block, and read the SYSTEM INFORMATION messages after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

8.1.1.5.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_PCH state (state 6-12) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~ with valid a U-RNTI assigned to it.

Test Procedure

The SS transmits a PAGING TYPE 1 message on the paging occasions assigned to the UE. The message shall include the IE “BCCH Modification Information” indicating the time when the first modified master information block is available. Before the starting time, SS continuously broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on the BCCH mapped to BCH transport channel. SS maintains this status until the SFN, which corresponds to the modification time, is reached. Then it transmits the new master information block followed by the new SYSTEM INFORMATION BLOCK TYPE 3 and 4 messages. In the new SIB TYPE 3 and 4 messages, the IE “Cell Access Restriction” is different when compared to the original SIB TYPE 3 and 4 messages. At the next paging occasion, SS transmits a new PAGING TYPE 1 message. This message addresses the UE using its IMSI and the “paging cause” IE set to a terminating call type that is supported by the UE. The UE shall consider the cell as barred and not respond to the PAGING TYPE 1 message. ~~Identical test steps 1 to 4 in Clause 8.1.1.4 are applied to this test. However, the PAGING TYPE 1 messages used in step 2 and step 4 are altered. The changes are indicated in the specific message content paragraph under this clause. At step 5, UE shall send the CELL UPDATE message indicating the "cell update cause" to be "paging response". SS then replies with a CELL UPDATE CONFIRM message to allow the UE to transit to CELL_FACH state.~~

~~NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	~~←~~		~~MASTER INFORMATION BLOCK~~ ~~SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13~~Void	~~SS transmits information on BCCH in order for UE to listen to one of the S-CCPCH physical channel, which carries PAGING TYPE 1 or 13 messages on PCCH. Relevant paging parameters are also broadcasted.~~
2	←		PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
3	←		MASTER INFORMATION BLOCK	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting.
	←		SYSTEM INFORMATION BLOCK TYPE ~~1 or SYSTEM INFORMATION BLOCK TYPE 13~~3 and 4	At the same time, SS starts to transmit the affected SIB TYPE ~~1 or TYPE 13 messages~~3 and 4 continuously. The value of IE "~~DRX Cycle Length Coefficient~~Cell Access Restriction" is changed ~~in this message~~from "Not barred" to "Barred". SS starts to monitor the uplink RACH after approximately 4087 SFN from step 2.
4	←		PAGING TYPE 1	SS transmits this message continuously on the PCCH ~~according to the new value of "DRX Cycle Length Coefficient", at the next paging occasion immediately following step 3. This message shall page the UE with its U-RNTI and setting the UTRAN as the paging originator.~~at the correct paging occasion.
~~5~~	~~→~~		~~CELL UPDATE~~	The UE shall not transmit an RRC CONNECTION REQUEST message.~~The IE "Cell Update Cause" shall be set to "Paging Response" and the IE "U-RNTI" shall be similar to the UE's U-RNTI value. The "Protocol Error Indicator" IE shall be set to FALSE.~~
~~6~~	~~←~~		~~CELL UPDATE CONFIRM~~	~~UE shall transit to CELL_FACH state after receiving this message.~~

Specific Message Contents

~~SYSTEM INFORMATION BLOCK TYPE 1 or TYPE 13 (Step 1)~~

~~The content of this message is the same in the message used in step 1 specified in clause 8.1.1.4.4.~~

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	4088

MASTER INFORMATION BLOCK (Step 3) and

SYSTEM INFORMATION BLOCK TYPE ~~1 or TYPE 13~~3 and 4 (Step 3)

The content of these messages is the same in the message used in step 3 specified in clause 8.1.1.4.4.

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
BCCH modification info	Not Present

~~CELL UPDATE CONFIRM (Step 6)~~

~~Use the same message type found in annex A, with the following exception:~~

~~Information Element~~	~~Value/remark~~
~~- U-RNTI~~	~~Equal to the U-RNTI assigned earlier.~~
~~- SRNC Identity~~	
~~- S-RNTI~~	
~~- RRC State Indicator~~	~~CELL_FACH~~

8.1.1.5.5 Test requirement

After step ~~5~~ 4 the UE shall not transmit any CELL UPDATE messages ~~with "cell update cause" IE set to "paging response". Upon receiving CELL UPDATE CONFIRM message, the UE shall enter the CELL_FACH state.~~

8.1.1.6 Paging for Notification in connected mode (URA_PCH)

8.1.1.6.1 Definition

8.1.1.6.2 Conformance requirement

When a system information block on the BCCH is modified, the UTRAN can send a PAGING TYPE 1 message on the PCCH to inform UE about the changes while the UE is in the URA_PCH state. This message includes the IE "BCCH Modification Information". When receiving this message in URA_PCH state, the UE shall read the relevant MIB and/or SIB(s).

Reference

3GPP TS 25.331 clause 8.1. ~~1.~~2.

8.1.1.6.3 Test purpose

To confirm that the UE ~~enters the CELL_FACH state,~~ checks the included new value tag of the master information block and reads the relevant SYSTEM INFORMATION block(s) after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

8.1.1.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH state (state 6-13) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~ with a valid U-RNTI assigned.

Test Procedure

The SS transmits a PAGING TYPE 1 message on the paging occasions assigned to the UE. The message shall include the IE “BCCH Modification Information” indicating the time when the first modified master information block is available. Before the starting time, SS continuously broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on the BCCH mapped to BCH transport channel. SS maintains this status until the SFN which corresponds to the modification time is reached. Then it transmits the new master information block followed by the new SYSTEM INFORMATION BLOCK TYPE 3 and 4 messages. In the new SIB TYPE 3 and 4 messages, the IE “Cell Access Restriction” is different when compared to the original SIB TYPE 3 and 4 messages. At the next paging occasion, SS transmits a new PAGING TYPE 1 message. This message addresses the UE using its IMSI and the “paging cause” IE set to a terminating call type that is supported by the UE. The UE shall consider the cell as barred and not respond to the PAGING TYPE 1 message. ~~Identical test steps 1 to 4 in clause 8.1.1.4 are applied to this test. However, the PAGING TYPE 1 messages used in step 2 and step 4 are altered. The changes are indicated in the specific message content paragraph under this clause. At step 5, UE shall send the CELL UPDATE message indicating the "cell update cause" to be "paging response". SS then replies with a CELL UPDATE CONFIRM message to allow the UE to transit to CELL_FACH state.~~

~~NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	~~←~~		~~MASTER INFORMATION BLOCK~~ ~~SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13~~Void	~~SS transmits information on BCCH in order for UE to listen to one of the S-CCPCH physical channel, which carries PAGING TYPE 1 or 13 messages on PCCH. Relevant paging parameters are also broadcasted.~~
2	←		PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
3	←		MASTER INFORMATION BLOCK	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting.
	←		SYSTEM INFORMATION BLOCK TYPE ~~1 or SYSTEM INFORMATION BLOCK TYPE 13~~3 and 4	At the same time, SS starts to transmit the affected SIB TYPE ~~1~~ 3 ~~or~~ and TYPE ~~13~~ 4 messages continuously. The value of IE "~~DRX Cycle Length Coefficient~~Cell Access Restriction" is changed ~~in this message~~from “Not barred” to “Barred”. SS starts to monitor the uplink RACH after approximately 4087 SFN from step 2.
4	←		PAGING TYPE 1	SS transmits this message continuously on the PCCH ~~according to the new value of "DRX Cycle Length Coefficient", at the next paging occasion immediately following step 3. This message shall page the UE with its U-RNTI and setting the UTRAN as the paging originator.~~at the correct occasion.
~~5~~	~~→~~		~~CELL UPDATE~~	The UE shall not transmit an RRC CONNECTION REQUEST message.~~The IE "Cell Update Cause" shall be set to "Paging Response" and the IE "U-RNTI" shall be similar to the UE's U-RNTI value. The "Protocol Error Indicator" IE shall be set to FALSE.~~
~~6~~	~~←~~		~~CELL UPDATE CONFIRM~~	~~UE shall transit to CELL_FACH state after receiving this message.~~

Specific Message Contents

~~SYSTEM INFORMATION BLOCK TYPE 1 or TYPE 13 (Step 1)~~

~~The content of this message is the same in the message used in step 1 specified in clause 8.1.1.4.4.~~

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	4088

MASTER INFORMATION BLOCK (Step 3) and

SYSTEM INFORMATION BLOCK TYPE ~~1 or TYPE 13~~3 and 4 (Step 3)

The content of these messages is the same in the message used in step 3 specified in clause 8.1.1.4.4.

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
BCCH modification info	Not Present

~~CELL UPDATE CONFIRM (Step 6)~~

~~Use the same message type found in Annex A, with the following exception:~~

~~Information Element~~	~~Value/remark~~
~~- U-RNTI~~	~~Equal to the U-RNTI assigned earlier.~~
~~- SRNC Identity~~	
~~- S-RNTI~~	
~~- RRC State Indicator~~	~~CELL_FACH~~

8.1.1.6.5 Test requirement

After step 4, the UE shall not transmit any CELL UPDATE messages.

~~After step 2 the UE shall enter the CELL_FACH state and read the SYSTEM INFORMATION message and follow it.~~

8.1.1.7 Paging for Connection in connected mode (CELL_DCH)

8.1.1.7.1 Definition

8.1.1.7.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 2 message from the network to selected UE~~s~~ in CELL_DCH state using the dedicated control channel (DCCH). The UE listens to it and responds to this message accordingly.

When UE receives an invalid PAGING TYPE 2 message, UE shall perform procedure specific error handling.

Reference

3GPP TS 25.331 clause 8.1.11.

8.1.1.7.3 Test purpose

To confirm that the UE responds ~~this message after it receives~~to a PAGING TYPE 2 message which includes IE "Paging Record Type Identifier" for the UE.

To confirm that the UE responds with a RRC STATUS message after it received an invalid PAGING TYPE 2 message.

8.1.1.7.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE, after executing a location registration or attach procedure followed by the release of the TMSI of P-TMSI allocated.

Test Procedure

The SS transmits an invalid PAGING TYPE 2 message. ~~which includes an unmatched Paging Record Type Identifier in CELL_DCH state. The UE shall not respond to this message. SS pages the UE again, this time with an invalid PAGING TYPE 2.~~ UE shall respond by transmitting a RRC STATUS message on the DCCH using RLC-AM mode. Finally, SS transmits a PAGING TYPE 2 message, which includes a matched Paging Record Type Identifier. Then the UE shall responds to this message by the transmission of an upper layer message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	~~PAGING TYPE 2~~Void	~~The SS transmits the message includes an unmatched identifier, then the UE does not respond.~~
2		←	PAGING TYPE 2	See message content.
3		→	RRC STATUS	The UE shall respond by reporting the protocol error to the SS.
4		←	PAGING TYPE 2	SS pages the UE with a matched identifier and with a valid "paging cause" IE.
5		→	UPLINK DIRECT TRANSFER	The UE shall respond to the paging message sent in step ~~4~~3.

Specific Message Contents

~~PAGING TYPE 2 (Step 1)~~

~~Information Element~~	~~Value/remark~~
~~Paging cause~~ ~~CN domain identity~~ ~~Paging record type identifier~~	~~Terminating Call supported by the UE~~ ~~Domain supported by the UE~~ ~~Set to "TMSI" or "P-TMSI" allocated during the execution of location registration or attach procedure respectively~~

PAGING TYPE 2 (Step 2)

Information Element	Value/remark
All IEs	Not Present

RRC STATUS (Step 3)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Protocol error information	Checked to see if set to "ASN.1 violation or encoding error"

PAGING TYPE 2 (Step 4)

Use the same message type found in Annex A, with the following exception.

Information Element	Values/Remarks
Paging cause CN domain identity Paging record type identifier	Terminating Call supported by the UE Domain supported by the UE Set to "IMSI (GSM-MAP)" for UEs supporting GSM-MAP core network type or "IMSI (DS-41)" for UEs supporting ANSI-41 core network type.

UPLINK DIRECT TRANSFER (Step 5)

Only the message type IE for this message is checked.

8.1.1.7.5 Test requirement

~~After step 1 the UE shall not respond to the paging message on the DCCH.~~

After step 2 the UE shall respond to the paging message by transmitting RRC STATUS on the DCCH, stating the protocol error as "ASN.1 violation or encoding error".

After step 4 the UE shall respond to the paging message by transmitting an UPLINK DIRECT TRANSFER message on the uplink DCCH.

8.1.1.8 Paging for Connection in connected mode (CELL_FACH)

8.1.1.8.1 Definition

8.1.1.8.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 2 message from the network to selected UE~~s~~ in CELL_FACH state using the dedicated control channel (DCCH). The UE shall listen to it and responds to this message accordingly.

Reference

3GPP TS 25.331 clause 8.1.11.

8.1.1.8.3 Test purpose

To confirm that the UE responds to a PAGING TYPE 2 message, which includes a matching value for IE "Paging Record Type Identifier".

8.1.1.8.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~.

Test Procedure

The SS transmits a PAGING TYPE 2 message~~, which includes an unmatched Paging Record Type Identifier in CELL_FACH state. The UE shall not respond to this message. The SS transmits a PAGING TYPE 2 message, which includes a matched Paging Record Type Identifier~~. Then the UE shall respond by transmitting an upper layer message to answer this page.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		~~←~~	~~PAGING TYPE 2~~Void	~~The SS transmits the message includes an unmatched identifier, then the UE does not respond.~~
2		←	PAGING TYPE 2	The SS transmits the message includes a matched identifier.
3		→	UPLINK DIRECT TRANSFER	The UE responds by sending an upper layer message.

Specific Message Content

PAGING TYPE 2 (Step 1)

Use the same message content as in step 1 from 8.1.1.7.4.

UPLINK DIRECT TRANSFER (Step 2)

Only the message type IE for this message is checked.

~~PAGING TYPE 2 (Step 2)~~

~~Use the same message content as in step 4 from 8.1.1.7.4.~~

8.1.1.8.5 Test requirement

~~After step 1 the UE shall not respond.~~

After step ~~2~~ 1 the UE shall respond to the ~~second~~ PAGING TYPE 2 message by transmitting an UPLINK DIRECT TRANSFER message on the uplink DCCH.

8.1.2 RRC Connection Establishment

8.1.2.1 RRC Connection Establishment in CELL_DCH state: Success

8.1.2.1.1 Definition

8.1.2.1.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message. This message shall include the IE "Initial UE identity" and is to be transmitted on the uplink CCCH.

2. After the UE receives an RRC CONNECTION SETUP message which includes the same value of the IE "initial UE identity", radio resource parameters (i.e. Signalling ~~link type~~radio bearers and multiplexing info) and U-RNTI, UE then configures the layer 2 and layer 1 ~~processing~~ so as to support the DCCH according to the radio resource parameters specified. The procedure successfully ends when the network receives an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.1.3 Test purpose

To confirm that the UE leaves the Idle Mode and correctly establishes ~~a~~ signalling ~~link~~ radio bearers on the DCCH.

8.1.2.1.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108~~-~~, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE. SS then transmits an RRC CONNECTION SETUP message containing an IE "Initial UE Identity" that does not match the IE "Initial UE Identity" in the most recent RRC CONNECTION REQUEST message sent by the UE. UE receives the RRC CONNECTION SETUP message ~~within~~ before timer T300 expires but discards it due to ~~the~~ a IE "Initial UE Identity" mismatch. UE shall wait for timer T300 to time out before re-transmitting a RRC CONNECTION REQUEST message to the SS. SS again assigns the necessary radio resources and U-RNTI. SS then ~~follows by transmitting~~ transmits a RRC CONNECTION SETUP message containing an IE "Initial UE Identity" that matches the IE "Initial UE Identity" in the most recent RRC CONNECTION REQUEST sent by the UE. SS then waits for the UE to transmit an RRC CONNECTION SETUP COMPLETE message on the DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	By outgoing call operation
2	←		RRC CONNECTION SETUP	This message is not addressed to the UE.
3	→		RRC CONNECTION REQUEST	UE shall re-transmit the request message again after a time out of T300 from step 1.
4	←		RRC CONNECTION SETUP	
5				The UE configures the layer 2 and layer 1.
6	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Content

RRC CONNECTION SETUP (Step 2)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Initial UE Identity CHOICE UE id type IMSI	 IMSI Set to an arbitrary octet string of length 7 which different from the IMSI value stored in the TEST USIM card.

8.1.2.1.5 Test requirement

After step 2 the UE shall re-transmit the RRC CONNECTION REQUEST message again in order to continue the RRC connection establishment procedure.

After step 6 the UE shall establish an RRC connection and continue the procedure of the outgoing call on the DCCH.

8.1.2.2 RRC Connection Establishment: Success after T300 timeout

8.1.2.2.1 Definition

8.1.2.2.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode. The UE shall transmit an RRC CONNECTION REQUEST message which includes the IE "Initial UE identity". This message shall be sent on the uplink CCCH.

   When there are more than one PRACHs available, the UE shall select one PRACH randomly and transmit an RRC CONNECTION REQUEST message by use of selected PRACH.

2. In the case of a failure to establish the RRC connection at the expiry of timer T300-, the UE retries to establish the RRC connection until V300 is greater than N300

   ~~When the UE receives a RRC CONNECTION SETUP message, which contains a protocol error and causing the internal variable PROTOCOL_ERROR_REJECT set to TRUE, it shall perform the appropriate error handling procedure.~~

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.2.3 Test purpose

To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 after the expiry of timer T300 when the SS transmits no response for an RRC CONNECTION REQUEST message.

8.1.2.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108~~-~~, depending on the CN domain(s) supported by the UE.

Test Procedure

Before the test starts, SYSTEM INFORMATION BLOCK TYPE 5 message is modified and this modification is notified to the UE. A~~a~~n internal counter K in SS is initialized to a value = 0. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by use of selected PRACH from the available PRACH No.1 and PRACH No.2, after the operator attempts to make an outgoing call. SS ignores this message, increments K every time such a message is received and waits for T300 timer to expire. This cycle is repeated until K reaches N300. When K is equal to N300, the SS transmits the RRC CONNECTION SETUP message specified in step 6 to the UE~~ and wait until T300 expires~~. The UE shall send another RRC CONNECTION REQUEST message on the uplink CCCH. ~~SS verifies that the UE does not access the radio resource allocated in step 6. After confirming this restriction is observed,~~ SS replies with a valid RRC CONNECTION SETUP message. The UE shall then acknowledge the establishment of RRC connection by sending the RRC CONNECTION SETUP COMPLETE message on uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" different from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
1a	←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 5	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting. At the same time, SS starts to transmit the affected SIB TYPE 5 messages.~~Transmit these messages on the BCCH. See specific message contents.~~
2				SS initializes counter K to 0. Operator is asked to make an outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
3	→		RRC CONNECTION REQUEST	
4				SS checks to see if K is equal to N300. If so, goes to step 6. Else, continues to execute step 5.
5				SS increments K. The next step is step 3.
6	←		RRC CONNECTION SETUP	Use an invalid message in ASN.1. ~~SS waits for T300 to expire again.~~
7	→		RRC CONNECTION REQUEST	~~UE shall not access the radio resource indicated in RRC CONNECTION SETUP message sent in step 6.~~
8	←		RRC CONNECTION SETUP	This is a legal message. See the clause 9 in TS 34.108 on default message content for RRC.
9				The UE configures the layer 1 and layer 2.
10	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

PAGING TYPE 1 (Step 1a)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	4088

SYSTEM INFORMATION TYPE 5 (Step 1)

- PRACH system information	2PRACHs
- PRACH info (PRACH No.1)	
- CHOICE mode	FDD
- Available Signature	'0000 0000 1111 1111'B
- Available SF	64
- Preamble scrambling code number	0
- Puncturing Limit	100
- Available Sub Channel number	'1111 1111 1111'B
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- RLC size	360
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	20 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	~~(This IE is repeated for TFC number.)~~
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Complete
- TFCS addition information	
- CHOICE CTFC Size	2 bit
- CTFC information	0
- Power offset information	
- CHOICE Gain Factors	Computed Gain Factor
- Power offset Pp-m	-5 dB
- CTFC information	~~Refer to clause 6.10 Parameter Set~~1
- Power offset information	
- CHOICE Gain Factors	Signalled Gain Factor
- Gain factor ßc	10
- Gain factor ßd	15
- Reference TFC ID	Not Present
- Power offset Pp-m	-5dB
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#0)

- Available signature End Index	7 (ASC#0)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#2)
- Available signature End Index	7 (ASC#2)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#3)
- Available signature End Index	7 (ASC#3)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#4)
- Available signature End Index	7 (ASC#4)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#5)
- Available signature End Index	7 (ASC#5)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#6)
- Available signature End Index	7 (ASC#6)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#7)
- Available signature End Index	7 (ASC#7)
- Assigned Sub-channel Number	'1111'B
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- Primary CPICH DL TX power	31
- Constant value	–10
- PRACH power offset	
- Power Ramp Step	3dB
- Preamble Retrans Max	2
- RACH transmission parameters	
- Mmax	2
- NB01min	3 slot
- NB01max	10 slot
- AICH info	
- Channelisation code	3
- STTD indicator	FALSE
- AICH transmission timing	0

- PRACH info (PRACH No.2)	
- CHOICE mode	FDD
- Available Signature	'0000 0000 1111 1111'B
- Available SF	64
- Preamble scrambling code number	~~0~~1
- Puncturing Limit	100
- Available Sub Channel number	'1111 1111 1111'B
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- RLC size	360
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	20 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Complete
- TFCS addition information	
- CHOICE CTFC Size	2 bit
- CTFC information	0
- Power offset information	
- CHOICE Gain Factors	Computed Gain Factor
- Power offset Pp-m	-5 dB
- CTFC information	1
- Power offset information	
- CHOICE Gain Factors	Signalled Gain Factor
- Gain factor ßc	10
- Gain factor ßd	15
- Reference TFC ID	Not Present
- Power offset Pp-m	-5dB
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#0)
- Available signature End Index	7 (ASC#0)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#2)
- Available signature End Index	7 (ASC#2)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#3)
- Available signature End Index	7 (ASC#3)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	

- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#4)
- Available signature End Index	7 (ASC#4)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#5)
- Available signature End Index	7 (ASC#5)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#6)
- Available signature End Index	7 (ASC#6)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#7)
- Available signature End Index	7 (ASC#7)
- Assigned Sub-channel Number	'1111'B
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- Primary CPICH DL TX power	31
- Constant value	–10
- PRACH power offset	
- Power Ramp Step	3dB
- Preamble Retrans Max	2
- RACH transmission parameters	
- Mmax	2
- NB01min	3 slot
- NB01max	10 slot
- AICH info	
- Channelisation code	4
- STTD indicator	FALSE
- AICH transmission timing	0

RRC CONNECTION SETUP (Step 6)

Information Element	Value/remark
~~UTRAN DRX cycle length coefficient~~All IEs	~~Out of range value~~Not Present

8.1.2.2.5 Test requirement

After step 2 the UE shall select either PRACH No.1 or PRACH No.2 and transmit an RRC CONNECTION REQUEST message.

After step 6 the UE shall re-send another RRC CONNECTION REQUEST message~~ and not access any radio resources specified in RRC CONNECTION SETUP message sent in step 6~~.

After step 9 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message and establish an RRC connection on the DCCH logical channel.

8.1.2.3 RRC Connection Establishment: Failure (V300 is greater than N300)

8.1.2.3.1 Definition

8.1.2.3.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message. This message shall include the IE "Initial UE identity" on the uplink CCCH.

2. In the case of a failure to establish the RRC connection after (N300+1) attempts, the UE goes back to idle mode.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.3.3 Test purpose

To confirm that the UE stops retrying to establish the RRC connection if V300 is greater than N300 and goes back to idle mode.

8.1.2.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108~~-~~, depending on the CN domain(s) supported by the UE.

Test Procedure

Before the test starts, SS initializes an internal counter K to 0. The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by an outgoing call operation. SS shall not respond to any RRC CONNECTION REQUEST message, instead the counter K is increased by 1 every time such a message is received. To arrive at the verdict, the SS checks that a total of (N300+1) such messages are received.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initializes counter K to 0 and then prompts the operator to make an outgoing call.
2	→		RRC CONNECTION REQUEST	
3				SS increments K by 1.
4				If K is greater than N300, goes to step 5 else proceed to step 2.
5				SS monitor the uplink CCCH for a time period enough for UE to goes back to idle state~~normal service~~. The exact amount of time to wait shall be derived from TS related to cell selection. If any uplink transmission is detected, the test fails.

Specific Message Contents

None

8.1.2.3.5 Test requirement

After step 5, counter K shall be equal to (N300+1) and there shall be no uplink transmission in the monitoring period specified in step 5.

8.1.2.4 RRC Connection Establishment: Reject ("wait time" is not equal to 0)

8.1.2.4.1 Definition

8.1.2.4.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message~~-~~. This message shall include the IE "Initial UE identity" and is to be sent on the uplink CCCH.

2. After the UE receives an RRC CONNECTION REJECT message which includes IE "wait time" not set to 0, and neither IE "frequency info" nor IE "system info" is present, the UE shall wait for a period specified in the IE "wait time". Thereafter re-transmit an RRC CONNECTION REQUEST message to attempt to establish the RRC connection again. ~~However, either IE "frequency info" or IE "system info" is available in the message, the UE shall attempt to perform cell reselection using these information.~~

3. After the UE receives an RRC CONNECTION REJECT message which includes IE "wait time" not set to 0, and either IE "frequency info" or IE "system info" is available in the message, the UE shall attempt to perform cell reselection using these information. Thereafter re-transmit an RRC CONNECTION REQUEST message to attempt to establish the RRC connection again.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.4.3 Test purpose

To confirm that the UE retries to establish the RRC connection after the "wait time" lapses, if the UE receives an RRC CONNECTION REJECT message which includes the IE "wait time" not set to 0.

To confirm that the UE performs a cell reselection when receiving an RRC CONNECTION REJECT message, containing relevant frequency information of the target cell to be re-selected.

8.1.2.4.4 Method of test

Initial Condition

System Simulator: 2 cells – both cell 1 and cell 2 are active and suitable for camping, but cell 1 is transmitted using a larger power. Cell 1 and cell 2 are being transmitted from different 2 UARFCNs. The transmission power of cell 2 is 15 dB smaller than cell 1.

Table 8.1.2.4

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel Number		Ch. 1	Ch. 2
CPICH Ec	dBm	-60	-75

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108-, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by an outgoing call operation in cell 1. SS rejects the first request by transmitting an RRC CONNECTION REJECT message which indicates a non-zero wait time. In this message, frequency information for cell 2 is available. SS then waits for RRC CONNECTION REQUEST message on the uplink CCCH of cell 2. SS will also monitor the uplink of cell 1 simultaneously to ensure that all transmission activities from cell 1 have ceased. When the UE has successfully camp onto cell 2, it shall send an RRC CONNECTION REQUEST with the same establishment cause as its previous attempt in cell 1. SS responds with an RRC CONNECTION REJECT message, indicating a non-zero "wait time" and omitting the IE "Redirection Info". The UE shall observe the wait time period indicated. After the wait time has elapsed, the UE shall re-transmit RRC CONNECTION REQUEST again. Finally, SS transmits an RRC CONNECTION SETUP message to establish an RRC connection with the UE, and the UE replies with an RRC CONNECTION SETUP COMPLETE message and enters CELL_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	SS prompts the operator to make an outgoing call in cell 1.
2	←		RRC CONNECTION REJECT	This message shall includes the IE "wait time" set to 15 seconds and IE "frequency info" set to the UARFCN of cell 2.
3				SS waits for a period of time sufficient for UE to reselect to cell 2. At the same time, it monitors the uplink of cell 1 to make sure that all transmissions have ceased.
4	→		RRC CONNECTION REQUEST	UE shall attempt to re-start an RRC connection establishment procedure in cell 2. The establishment cause shall remain unchanged.
5	←		RRC CONNECTION REJECT	This message shall include the IE "wait time" set to 15 seconds, but with IE "Redirection Info" absent.
6	→		RRC CONNECTION REQUEST	SS waits until the duration specified in IE "wait time" has elapsed and then listens to the uplink CCCH for a second RRC CONNECTION REQUEST message.
7	←		RRC CONNECTION SETUP	SS sends the message to UE~~,~~ to setup an RRC connection with the UE.
8				The UE shall configure the layer 2 and layer 1 in order to access the uplink and downlink DCCH assigned.
9	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

RRC CONNECTION REQUEST (Step 1)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Initial UE Identity	Checked to see if it is set to IMSI stored in the test TEST USIM card.~~Must be equal to U-RNTI assigned previously~~
~~Initial UE Capability~~ Establishment Cause	~~Must be compatible with UE settings in TS25.306~~ Must be "Originating Call"

RRC CONNECTION REJECT (Step 2)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Wait time	15 seconds
Redirection Info	
Frequency Info	
UARFCN uplink (Nu)	Set to ~~a different~~ the UARFCN ~~from~~ for uplink carrier of cell 2~~1~~
UARFCN downlink (Nd)	Not present ~~– assuming a duplex distance of 190MHz.~~

RRC CONNECTION REQUEST (Step 4 and step 6)

Same requirement as in step 1.

RRC CONNECTION REJECT (Step 5)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Wait time ~~Redirection Info~~	15 seconds ~~Not present~~

8.1.2.4.5 Test requirement

After step 3 the UE shall have successfully re-selected to cell 2, using information transmitted in IE "frequency info" of RRC CONNECTION REJECT message. UE shall trigger the start of RRC connection establishment by transmitting RRC CONNECTION REQUEST. The establishment cause shall be similar to the message sent in step 1.

After step 5 the UE shall observe the period specified in IE "wait time" of an RRC CONNECTION REJECT message and not transmit an RRC CONNECTION REQUEST message in this period.

After step 7 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message to SS on uplink DCCH and then establish an RRC connection.

8.1.2.5 RRC Connection Establishment: Reject ("wait time" is not equal to 0 and V300 is greater than N300)

8.1.2.5.1 Definition

8.1.2.5.2 Conformance requirement

The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message-. This message shall include the IE "Initial UE identity" and is to be sent on the uplink CCCH.

After the UE receives an RRC CONNECTION REJECT message which includes IE "wait time" not set to 0, and neither IE "frequency info" nor IE "system info" is present, the UE shall wait for a period specified in the IE "wait time". Thereafter it re-transmits an RRC CONNECTION REQUEST message to attempt to establish the RRC connection again. In the case of a failure to establish the RRC connection after (N300+1) attempts, the UE goes back to idle mode.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.5.3 Test purpose

To confirm that the UE retries to establish the RRC connection after the "wait time" elapses if the UE receives an RRC CONNECTION REJECT message which specifies a non-zero IE "wait time".

To confirm that the UE stops retrying to establish the RRC connection if V300 is greater than N300 and goes back to idle mode.

8.1.2.5.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108-, depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, SS initializes an internal counter K to 0. The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH, triggered by an outgoing data call operation. SS rejects all requests by transmitting an RRC CONNECTION REJECT message which indicates a non-zero wait time and the counter K is increased by 1 every time such a message is received. To arrive at the verdict, the SS checks that a total of (N300+1) such messages are received and the UE enters idle state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initializes counter K to 0 and then prompts the operator to make an outgoing data call.
2	→		RRC CONNECTION REQUEST	Shall be sent on CCCH and contain the correct establishment cause.
3	←		RRC CONNECTION REJECT	This message includes the IE "wait time" set to 15 seconds.
4				SS increments K by 1.
5				If K is greater than N300, goes to step 6. Else SS waits for 15 sec before proceeding to step 2.
6				SS monitor the uplink CCCH for a time period enough for UE to goes back to idle statenormal service. The exact amount of time to wait shall be derived from TS related to cell selection. If any uplink transmission is detected, the test fails.

Specific Message Contents

RRC CONNECTION REQUEST (Step 2)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Initial UE Identity	Checked to see if it is set to IMSI stored in the test
Initial UE Capability	TEST USIM card.Must be equal to U-RNTI assigned previously
Establishment Cause	Must be compatible with UE settings in TR25.926 Must be "Originating Call"

RRC CONNECTION REJECT (Step 3)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Wait time	15 seconds

8.1.2.5.5 Test requirement

After step 6, counter K shall be equals to (N300+1) and there shall be no uplink transmission in the monitoring period specified in step 6.

8.1.2.6 RRC Connection Establishment: Reject ("wait time" is set to 0)

8.1.2.6.1 Definition

8.1.2.6.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message on the uplink CCCH.

2. In the case of a failure to establish the RRC connection by the reception of a RRC CONNECTION REJECT message which contains IE "wait time" equals to 0, the UE shall go back to idle mode immediately.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.6.3 Test purpose

To confirm that the UE goes back to idle mode, if the SS transmits an RRC CONNECTION REJECT message which includes IE "wait time" set to 0. To confirm that the UE ignores an RRC CONNECT REJECT message not addressed to it. To confirm that the UE is capable of handling an erroneous RRC CONNECTION REJECT message correctly.

8.1.2.6.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108~~-~~, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by making an outgoing call. After the SS receives this message, it transmits an RRC CONNECTION REJECT message which is not addressed to the UE. The UE shall disregard this message and proceed to re-transmit RRC CONNECTION REQUEST message upon T300 timer expiry. SS answers the second RRC CONNECTION REQUEST message by transmitting an invalid RRC CONNECTION REJECT message~~ with IE "wait time" set to 15 seconds, but without the mandatory IE "rejection cause"~~. The UE shall continue to send the third RRC CONNECTION REQUEST message upon expiry of T300 timer~~after a 15 second lapse~~. Next, the SS sends a legal RRC CONNECTION REJECT message which includes IE "wait time" which is set to '0'~~is expected to cause the UE to move to idle mode spontaneously~~. To confirm that ~~finally~~ the UE goes back to idle mode immediately after receiving the reject message, SS shall monitor the uplink CCCH for the next 60 seconds and verify that there is no further transmission in the uplink direction.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	Test operator is prompted to make an out-going call,
2	←		RRC CONNECTION REJECT	IE "Initial UE identity" contains an identity different from any of the UE identities available.
3	→		RRC CONNECTION REQUEST	UE shall ~~continue to~~ send this message after T300 ~~time-out~~expires.
4	←		RRC CONNECTION REJECT	~~IE "Reject Cause" is omitted, IE "wait time" is set to 15 seconds (maximum).~~
5	→		RRC CONNECTION REQUEST	UE shall ~~continue to~~ send this message after T300 expires~~the expiry of "wait time" IE indicated in RRC CONNECTION REJECT message in step 4~~.
6	←		RRC CONNECTION REJECT	IE "wait time" is set to 0.
7				The UE goes back to idle mode.~~.~~

Specific Message Contents

RRC CONNECTION REQUEST (Step 1, 3 and 5)

Information Element	Value/remark
Message Type	
Initial UE Identity	Checked to see if it is set to IMSI stored in the test TEST USIM card.
Establishment Cause	Checked to see if set to one of the supported originating call types
Protocol Error Indicator	Checked to see if set to "FALSE"
Measured Results on RACH	Checked to see if it is absent

RRC CONNECTION REJECT (Step 2)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Initial UE Identity	
IMSI	Set to an arbitrary octet string of length 7 bytes, which is different from the IMSI stored in TEST USIM.
~~Wait time~~	~~15 seconds~~
~~Redirection Info~~	~~Not present~~

~~RRC CONNECTION REQUEST (Step 3)~~

~~Information Element~~	~~Value/remark~~
~~Initial UE Identity~~	~~Checked to see if it is set to IMSI stored in the test TEST USIM card.~~
~~Establishment Cause~~	~~Checked to see if set to one of the supported originating call types~~
~~Protocol Error Indicator~~	~~Checked to see if set to "FALSE"~~
~~Measured Results on RACH~~	~~Checked to see if it is absent~~

RRC CONNECTION REJECT (Step 4)

Information Element	Value/remark
~~Initial UE Identity~~	
~~IMSI~~	~~Set to the identical octet string as the IMSI stored in the TEST USIM card.~~
~~Reject Cause~~	~~Not Present~~
~~Wait time~~	~~15 seconds (Maximum)~~
~~Redirection Info~~All IEs	~~Not Present~~Not Present

~~RRC CONNECTION REQUEST (Step 5)~~

~~Information Element~~	~~Value/remark~~
~~Initial UE Identity~~	~~Checked to see if it is set to IMSI stored in the test TEST USIM card.~~
~~Establishment Cause~~	~~Checked to see if set to one of the supported originating call types~~
~~Protocol Error Indicator~~	~~Checked to see if set to "TRUE"~~
~~Measured Results on RACH~~	~~Checked to see if it is absent~~

RRC CONNECTION REJECT (Step 6)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Initial UE Identity	
IMSI	Set to the identical octet string as the IMSI stored in the TEST USIM card.
Reject Cause	Congestion
Wait time	0 second
~~Redirection Info~~	~~Not present~~

8.1.2.6.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION REQUEST message on uplink CCCH upon expiry of T300 timer.

After step 4 the UE shall re-transmit an RRC CONNECTION REQUEST message on the uplink CCCH upon expiry of T300 timer~~15 seconds after the transmission of the second downlink RRC CONNECTION REJECT message. In this message, the "protocol error indicator" IE shall be set to "TRUE"~~.

After step 6 the UE shall stop sending an RRC CONNECTION REQUEST message, go back to idle mode immediately and not transmit in the uplink direction again.

8.1.2.7 RRC Connection Establishment in CELL_FACH state: Success

8.1.2.7.1 Definition

8.1.2.7.2 Conformance requirement

During the RRC connection establishment, the UTRAN might assign common physical resource to the UE using an RRC CONNECTION SETUP message. When no information about the physical channels accessible is available from the message, the UE shall utilize the PRACH and S-CCPCH information transmitted on the BCCH and then enter ~~the~~ CELL_FACH state. Subsequently, the UE shall establish the required signalling ~~links~~ radio bearers with the UTRAN using common physical resources.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.7.3 Test Purpose

To confirm that the UE is able to enter CELL_FACH state and setup signalling ~~links~~ radio bearers using common physical channels.

8.1.2.7.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After the SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE, and then transmits an RRC CONNECTION SETUP message to the UE within timer T300. SS then waits for the UE to transmit an RRC CONNECTION SETUP COMPLETE message on the DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	RRC CONNECTION REQUEST	Test operator is requested to make an outgoing call. The UE shall transmit this message, indicating the correct establishment cause.
2		←	RRC CONNECTION SETUP	SS omits both IE "Uplink DPCH Info" and IE "Downlink DPCH Info" from the message.
3				The UE shall configure the layer 2 and layer 1.
4		→	RRC CONNECTION SETUP COMPLETE	UE shall send this message on the DCCH, carried by the assigned PRACH resources.

Specific Message Content

RRC CONNECTION REQUEST

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Initial UE identity	Checked to see if it is set to IMSI stored in the test TEST USIM card.
Establishment Cause	Originating Interactive Call or Originating Background Call or Originating Streaming Call

RRC CONNECTION SETUP

For this message, the contents of the message to be used are basically identical to the message sub-type entitled "RRC CONNECTION SETUP message (Transition to CELL_FACH)" found in ~~the default message content part~~Annex A. ~~The following exceptions are applicable in this test:~~

~~Information Element~~	~~Value/remark~~
~~Uplink DPCH Info~~	~~Not Present~~
~~Downlink information common for all radio links~~	~~Not Present~~
~~Downlink information per radio link list~~	~~Not Present~~

RRC CONNECTION SETUP COMPLETE

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
UE Radio Access Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.
UE radio access capability extension	Checked to see if compatible with the stated capability in PIXIT/PICS statements.
UE system specific Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.

8.1.2.7.5 Test requirements

After step 3 the UE shall establish the RRC connection, and transmit RRC CONNECTION SETUP COMPLETE message on the DCCH using PRACH physical resource specified in system information block messages.

8.1.2.8 ~~RRC Connection Establishment: Invalid system information message reception~~Void

~~8.1.2.8.1 Definition~~

~~8.1.2.8.2 Conformance requirement~~

~~The UE shall ignore the message and shall not select the cell, if the associated a SYSTEM INFORMATION message on the BCCH which includes an invalid value in the mandatory information element which in the master information block is broadcasting.~~

~~Reference~~

~~3GPP TS 25.331 clause 8.1.1 and clause 9.~~

~~8.1.2.8.3 Test purpose~~

~~To confirm that the UE does not select the cell if the transmitted SYSTEM INFORMATION message on the BCCH which includes an invalid value in the information element in the master information block is broadcasting.~~

~~8.1.2.8.4 Method of test~~

~~Initial Condition~~

~~System Simulator: 1 cell.~~

~~UE: Power off (state 1) as specified in clause 7.4 of TS 34.108.~~

~~Test Procedure~~

~~The SS broadcasts the SYSEM INFORMATION message on the BCCH which includes the PLMN Type information element having an invalid value in the master information block. When the UE is supplied the power, it finds that the SYSTEM INFORMATION message on the BCCH includes the unknown value in the mandatory information element and the UE shall ignore this message. When an outgoing call is attempted, the test operator shall be informed that the UE is in a "No Service" state. The UE shall not transmit an RRC CONNECTION REQUEST message on the uplink CCCH.~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SYSTEM INFORMATION	The SS broadcasts the SYSTEM INFORMATION message on the BCCH which includes an invalid value in the master information block.
2				The UE is supplied the power.
3				SS waits for 1 minute and then asks the test operator to attempt to make an outgoing call.
4				SS checks that no uplink transmission on CCCH is detected.

Specific Message Contents

SYSTEM INFORMATION (master information block)

The contents of a SYSTEM INFORMATION message in this test case is identical to the corresponding message found in the default contents of layer 3 messages for RRC tests, with the following exceptions:

Information Element	Value/remark
Supported PLMN Types	invalid value which is not defined

8.1.2.8.5 Test requirement

After step 3 the UE shall not transmit an RRC CONNECTION REQUEST message on the uplink CCCH.

8.1.2.9 RRC Connection Establishment: Success after Physical channel failure, Invalid message reception and Invalid configuration

8.1.2.9.1 Definition

8.1.2.9.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode. The UE shall transmit an RRC CONNECTION REQUEST message which includes the IE "Initial UE identity". This message shall be sent on the uplink CCCH.

2. In the case of a failure to establish the RRC connection at due to a the physical channel failure after the UE receives an RRC CONNECTION SETUP message-, the UE retries to establish the RRC connection until V300 is greater than N300

3. In the case of an invalid RRC CONNECTION SETUP message is received by UE, the UE retries to establish the RRC connection until V300 is greater than N300

43. In the case of a RRC CONNECTION SETUP message is received by UE causes invalid configuration, the UE retries to establish the RRC connection until V300 is greater than N300.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.9.3 Test purpose

To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 ~~for the~~when a physical channel failure ~~as the~~occurs because SS does not configure the physical channel ~~which~~ that is specified in the transmitted RRC CONNECTION SETUP message. To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 when the transmitted RRC CONNECTION SETUP message causes invalid configuration in the UE.

8.1.2.9.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7-) as specified in clause 7.4 of TS 34.108-, depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, an internal counter K in SS is initialised to a value = 0. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH, after the operator attempts to make an outgoing call. SS increments K every time such a message is received. Then, SS shall send a RRC CONNECTION SETUP message that contains an invalid configuration. UE shall then send RRC CONNECTION REQUEST message to SS again. Next SS transmits an RRC CONNECTION SETUP message to make the UE configure the physical channel in order to communicate on the DCCH but SS does not configure the physical channel. Then the UE detects the physical channel failure and transmits an RRC CONNECTION REQUEST message. This cycle is repeated until K reaches N300. When K is equal to N300, the SS transmits the RRC CONNECTION SETUP message and configures the physical channel. The UE shall detect "in-sync" from physical layer and then acknowledge the establishment of RRC connection by sending the RRC CONNECTION SETUP COMPLETE message on uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initialises counter K to 0. Operator is asked to make an outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
2	→		RRC CONNECTION REQUEST	~~SS increments K.~~
2a				SS increments K by 1 for every RRC CONNECTION REQUEST message received in step 2
3				SS checks to see if K is equal to N300+1. If so, goes to step 6. Else, continues to execute step 4.
4	←		RRC CONNECTION SETUP	See message content below. SS does not configure the physical channel.
5				The next step is step 2.
6	←		RRC CONNECTION SETUP	See the clause 9 in TS 34.108 on default message content for RRC. SS configures the physical channel.
7				The UE configures the layer 1 and layer 2.
8	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

RRC CONNECTION SETUP (Step 4 and K=1)

Use the same message sub-type found in ~~Clause~~ clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH info	Not present

RRC CONNECTION SETUP (Step 4 and K>~~2~~1)

Use the same message sub-type found in clause 9 of TS 34.108.

RRC CONNECTION REQUEST (Step 2 and K~~>~~=1)

Use the same message sub-type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
Initial UE identity	Checked to see if it is set to IMSI stored in the test TEST USIM card.
Establishment Cause	Originating Interactive Call or Originating Background Call or Originating Streaming Call
Protocol error indicator	TRUE

8.1.2.9.5 Test requirement

After step 4 the UE shall re-send RRC CONNECTION REQUEST message.

After step 8 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message and establish an RRC connection.

8.1.3 RRC Connection Release

8.1.3.1 RRC Connection Release in CELL_DCH state: Success

8.1.3.1.1 Definition

8.1.3.1.2 Conformance requirement

In case of an RRC connection release from CELL_DCH state, the UTRAN transmits an RRC CONNECTION RELEASE message to the UE using unacknowledged mode on the DCCH. The UE then responds by transmitting an RRC CONNECTION RELEASE COMPLETE message using unacknowledged mode to UTRAN for N308 times, each time at the expiry of T308 timer. Then the UE leaves the RRC connected mode and initiates release of the layer 2 signalling ~~link~~radio bearer. The RRC Connection Release procedure ends when all UE dedicated resources (such as radio resources and radio access bearers) associated with the RRC connection are released and the UE returns to idle mode.

Reference

3GPP TS 25.331 clause 8.1.4.

8.1.3.1.3 Test purpose

To confirm that the UE releases the L2 signalling ~~link~~ radio bearer and dedicated resources and goes back to the idle state after it receives an RRC CONNECTION RELEASE message from the SS and transmits an RRC CONNECTON RELEASE COMPLETE message to the SS for N308+1 times at the interval specified by the value of T308 timer.

8.1.3.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to the CELL_DCH state by prompting the operator to initiate an outgoing call. After the DCCH is established, SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the connection. SS then waits for the UE to transmit an RRC CONNECTION RELEASE COMPLETE message using unacknowledged mode. SS checks to see if P such messages has been received at each expiry of T308 timer. P is equal to the value of IE "~~Number of RRC Message Transmissions~~N308" in an RRC CONNECTION RELEASE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state after a successful RRC connection establishment by virtue of the operator making an outgoing call.
2	←		RRC CONNECTION RELEASE	SS disconnect the connection established. The value in IE "N308~~Number of RRC Message Transmissions~~" is arbitrarily chosen from ~~4~~ 1 to 8 and denoted by P.
3	→		RRC CONNECTION RELEASE COMPLETE	SS waits for the arrival of N308 such message at the expiry of each T308 timer, using unacknowledged mode.
4				The UE releases L2 signalling ~~link~~ radio bearer and dedicated resources. Then the UE goes to idle mode.

Specific Message Content

RRC CONNECTION RELEASE (Step 2)

Use the same message type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
N308~~Number of RRC Message Transmission~~	Arbitrarily chosen between ~~4~~ 1 and 8

8.1.3.1.5 Test requirement

After step 2 the UE shall start to transmit P times RRC CONNECTION RELEASE COMPLETE messages ~~at~~ and each time after the expiry of ~~each~~ T308 timer.

After step 3 the UE shall initiate the release L2 signalling ~~link~~ radio bearer and dedicated resources, then it shall go to idle mode.

8.1.3.2 RRC Connection Release using on DCCH in CELL_FACH state: Success

8.1.3.2.1 Definition

8.1.3.2.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in the network may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. Upon the reception of this message, the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to UTRAN on the DCCH and goes back to idle mode after it receives an RLC confirmation from the UTRAN.

Reference

3GPP TS 25.331 clause 8.1.4.

8.1.3.2.3 Test purpose

To confirm that the UE releases the L2 signalling ~~link~~ radio bearer and resources and goes back to the idle state after it receives an RRC CONNECTION RELEASE message on downlink DCCH from the SS. It shall transmit an RRC CONNECTON RELEASE COMPLETE message using acknowledged mode on uplink DCCH to the SS.

8.1.3.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to an initial state of CELL_FACH. After the successful establishment of the RRC connection, the SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the radio link. When the UE receives this message the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS. Finally, SS checks that the UE performs proper release of all radio resources and then goes back to idle mode.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	SS sends this message using unacknowledged mode RLC operations on the uplink DCCH.
3	→		RRC CONNECTION RELEASE COMPLETE	The UE transmits this message using acknowledged mode.
4				The UE releases L2 signalling ~~link~~ radio bearer and radio resources. Then the UE goes to idle mode.

Specific Message Contents

None.

8.1.3.2.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode then it shall receive a response for this message from the SS-RLC.

After step 3 the UE shall release its L2 signalling ~~link~~ radio bearers and radio resources, then it shall go back to idle mode.

8.1.3.3 RRC Connection Release using on CCCH in CELL_FACH state: Success

8.1.3.3.1 Definition

8.1.3.3.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in the network may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the CCCH. Upon the reception of this message, the UE shall release the RRC connection immediately, without replying with a RRC CONNECTION RELEASE COMPLETE message on the uplink.

Reference

3GPP TS 25.331 clause 8.1.4.

8.1.3.3.3 Test purpose

To confirm that the UE releases all its radio resources upon the reception of a RRC CONNECTION RELEASE message on the downlink CCCH, without transmitting RRC CONNECTION RELEASE COMPLETE message on the uplink.

8.1.3.3.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to an initial state of CELL_FACH. After the successful establishment of the RRC connection, SS transmits an RRC CONNECTION RELEASE message on the downlink CCCH. The UE shall terminate the RRC connection and release all radio resources allocated to it. SS monitors the uplink DCCH and CCCH to verify that no transmission is detected.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	SS transmits this message with the contents identical to that found in TS 34.108 clause 9 on downlink CCCH.
3				SS waits for a period equivalent to 60 seconds. The UE shall not send any response message on uplink direction during this period. It shall release the radio resources allocated and return to idle mode.

Specific Message Contents

None.

8.1.3.3.5 Test requirement

After step 2 the UE shall release all its radio resources, return to idle mode, without transmitting RRC CONNECTION RELEASE COMPLETE message on the uplink direction.

8.1.3.4 RRC Connection Release in CELL_FACH state: Failure

8.1.3.4.1 Definition

8.1.3.4.2 Conformance requirement

In case of RRC connection release from CELL_FACH state, the RRC layer entity in the network issues an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. When the UE does not succeed to transmit the RRC CONNECTION RELEASE COMPLETE message using acknowledged mode, it shall release all its radio resources, enter idle mode and the procedure ends on the UE side.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.4.3 Test purpose

To confirm that the UE releases all its radio resources and enters idle mode when the UE does not succeed in transmitting the RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS (i.e. the UE-RLC cannot receive acknowledgement for the transmission of the RRC CONNECTION RELEASE COMPLETE message from SS).

8.1.3.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

At the start of the test, the UE is brought to CELL_FACH state. When the RRC connection has been established, the SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the radio link. When the UE receives this message the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS. The SS ignores the message and does not transmit a STATUS PDU of RLC for this message. SS checks to see that UE continues to release all its radio resources and then enters idle mode.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought into CELL_FACH state by asking the operator to perform an outgoing call attempt. ~~clause~~
2	←		RRC CONNECTION RELEASE	SS ask to disconnect the radio link
3	→		RRC CONNECTION RELEASE COMPLETE	The UE transmits this message using acknowledged mode. The SS ignores this message and shall not transmit a STATUS PDU of RLC for this message.
4				SS checks to make sure that UE releases its all radio resources and enter idle mode.

Specific Message Contents

None

8.1.3.4.5 Test requirement

After step 3 the UE shall release its L2 signalling radio bearers ~~link~~ and radio resources then it shall go to idle mode.

8.1.3.5 RRC Connection Release in CELL_FACH state: Invalid message

8.1.3.5.1 Definition

8.1.3.5.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in UTRAN may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. If an invalid RRC CONNECTION RELEASE message is received by the UE, the UE shall activate the appropriate error-handling mechanism and report the error to the UTRAN. After this, the UE shall release the RRC connection.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.5.3 Test purpose

When the UE receives an invalid RRC CONNECTION RELEASE message on the downlink DCCH, it shall transmit an RRC CONNECTON RELEASE COMPLETE message that includes the appropriate error cause on the uplink DCCH. Thereafter, it shall release the RRC connection.

8.1.3.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to an initial state of CELL_FACH. SS transmits an invalid RRC CONNECTION RELEASE message on the DCCH to request to disconnect the RRC connection. ~~However, the message contains an invalid value in the IE "Release cause". As a result, t~~The UE shall transmit an RRC CONNECTION RELEASE COMPLETE message on the uplink DCCH, which includes the IE "Error indication". This IE shall contain "Failure cause" IE which is set to "Protocol error" and "Protocol error information" IE which is set to " ASN.1 violation or encoding error ~~Information element value not comprehended~~". The UE shall release the RRC connection and go back to idle mode after transmitting the RRC CONNECTION RELEASE COMPLETE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	See specific message contents for this message
3	→		RRC CONNECTION RELEASE COMPLETE	The IE "Protocol error cause" found in IE "Protocol error information" shall be set to " ASN.1 violation or encoding error ~~Information element value not comprehended~~". This message is sent using acknowledge mode.
4				The UE shall release the signalling radio bearers ~~link~~ and radio resources, and then return to idle mode.

Specific Message Contents

RRC CONNECTION RELEASE (Step 2)

Information Element	Value/remark
~~Release cause~~All IEs	~~invalid value~~Not Present

RRC CONNECTION RELEASE COMPLETE

Check to see if the same message type found in clause 9 of TS 34.108 is received, with the following exceptions:

Information Element	Value/remark
Error Indication Failure cause –Protocol error information - Protocol error cause	 Protocol error ASN.1 violation or encoding error~~Information element value not comprehended~~

8.1.3.5.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message which includes the appropriate cause values in IE "Error Indication".

After step 3 the UE shall release its L2 signalling radio bearers ~~link~~ and radio resources, then it shall go back to idle mode.

8.1.4 Void

8.1.5 UE capability

8.1.5.1 UE Capability in CELL_DCH state: Success

8.1.5.1.1 Definition

8.1.5.1.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE or if the UTRAN needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. When the UE receives a UE CAPABILITY ENQUIRY message, the UE transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. Then the UTRAN transmits a UE CAPABILITY INFORMATION CONFIRM message.

3. If during the execution of UE capability update procedure, an invalid UE CAPABILITY INFORMATION CONFIRM is received, the UE shall respond with RRC STATUS message and decide whether to re-transmit UE CAPABILITY INFORMATION message by comparing its internal counter against N304.

Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

8.1.5.1.3 Test purpose

To confirm that the UE transmits a UE CAPABILITY INFORMATION message after it receives a UE CAPABILITY ENQUIRY message from the SS. To confirm that the UE indicates an invalid message reception when invalid ~~erroneous downlink~~ UE CAPABILITY ENQUIRY and UE CAPABILITY INFORMATION CONFIRM messages are received. The UE shall transmit RRC STATUS message with the correct error cause value to SS.

8.1.5.1.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to the CELL_DCH state after a successful outgoing call attempt. The SS transmits an invalid ~~erroneous~~ UE CAPABILITY ENQUIRY message ~~containing invalid value in the IE "Capability update requirement"~~. This message lacks all IEs except IE “Message Type”. After receiving such a message, the UE shall report the error using RRC STATUS message with the appropriate error cause specified. Then SS transmits a correct UE CAPABILITY ENQUIRY message ~~which includes the IE "Capability update requirement"~~, the UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "UE radio access capability" IE. The SS transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE to complete the test. Then SS initiates another UE capability enquiry ~~update~~ procedure ~~by transmitting the same UE CAPABILITY ENQUIRY using as in step 4~~. The UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH. When SS receives this message, it transmits an invalid ~~erroneous~~ UE CAPABILITY INFORMATION CONFIRM message. This message lacks all IEs except IE “Message Type”. ~~The content of this message is lack of all IE.~~ The UE shall detect a protocol error and send RRC STATUS message to report this event. After receiving RLC acknowledgement for this message, the UE shall re-transmit UE CAPABILITY INFORMATION message on the uplink DCCH ~~by~~ after the expiry of T304. SS completes this test by transmitting an error-free UE CAPABILITY INFORMATION CONFIRM message similar to the message sent in step 6.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2	←		UE CAPABILITY ENQUIRY	See specific message contents for this message
3	→		RRC STATUS	The IE "Protocol error cause" found in IE "Protocol error information" shall be set to " ASN.1 violation or encoding error ~~Information element value not comprehended~~"
4	←		UE CAPABILITY ENQUIRY	Use default message.
5	→		UE CAPABILITY INFORMATION	Use default message.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message.
7	←		UE CAPABILITY ENQUIRY	Same as in step 4.
8	→		UE CAPABILITY INFORMATION	Shall be the same message content as in step 5.
9	←		UE CAPABILITY INFORMATION CONFIRM	See specific message contents for this message
10	→		RRC STATUS	UE shall detect an error and then transmit this message.
11	→		UE CAPABILITY INFORMATION	UE shall re-transmit this message after T304~~'s expiry~~expires.
12	←		UE CAPABILITY INFORMATION CONFIRM	SS sends an error-free message to acknowledge the receipt of the uplink message.

Specific Message Contents

UE CAPABILITY ENQUIRY (Step 2)

Information Element	Value/remark
~~Capability update requirement~~ ~~- UE radio access FDD capability update requirement~~ ~~- UE radio access TDD capability update requirement~~ ~~- System specific capability update requirement list~~ ~~- System specific capability update requirement~~All IEs	 ~~TRUE~~ ~~FALSE~~ ~~invalid value~~Not Present

RRC STATUS (Step 3)

Check to see if the same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
~~Identification of received messag type~~ ~~- Received message type~~ ~~- RRC transaction identifier~~ Protocol Error Information - Protocol Error Cause	 ~~Checked to see if set to "UE CAPABILITY ENQUIRY"~~ ~~Checked to see if set to the same value in the UE CAPABILITY ENQUIRY message~~ ~~Checked to see if set to "~~ASN.1 violation or encoding error ~~Information element not comprehended"~~

UE CAPABILITY INFORMATION CONFIRM (Step 9)

Information Element	Value/remark
All IEs	Not Present

RRC STATUS (Step 10)

Check to see if the same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 ~~Checked to see if set to "~~ASN.1 violation or encoding error~~"~~

8.1.5.1.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH, reporting the error with protocol error cause set to " ASN.1 violation or encoding error ~~Information element value not comprehended~~".

After step 4 and 7 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH to respond to the UE CAPABILITY ENQUIRY message.

After step 9, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 10, the UE shall re-transmit the UE CAPABILITY INFORMATION message with a similar content as in step 8 after the expiry of T304.

8.1.5.2 UE Capability in CELL_DCH state: Success after T304 timeout

8.1.5.2.1 Definition

8.1.5.2.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE, if the UTRAN needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. After the UE receives a UE CAPABILITY ENQUIRY message, it transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. If it fails to receive a UE CAPABILITY INFORMATION CONFIRM message, the UE re-transmits another UE CAPABILITY INFORMATION message after T304 expires until V304 is greater than N304.

Reference

3GPP TS 25.331 clause 8.1.6 and 8.1.7.

8.1.5.2.3 Test purpose

To confirm that the UE re-transmits a UE CAPABILITY INFORMATION message until V304 is greater than N304, after the expiry of timer T304 when the UE cannot receive a UE CAPABILITY INFORMATION CONFIRM message in response to a UE CAPABILITY INFORMATION message.

8.1.5.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_DCH state. When the SS transmits a UE ~~CA~~CAPABILITY ENQUIRY message which includes the "Capability update requirement" IE, the UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "UE radio access capability" IE. The SS does not transmit~~s~~ a UE CAPABILITY INFORMATION CONFIRM message to the UE, resulting in the T304 timer to expire. SS shall observe that the UE attempts to transmit a UE CAPABILITY INFORMATION message again. The UE shall re-transmit N304 times, and SS transmits a UE CAPABILITY INFORMATION CONFIRM message to answer the last request and completes this test procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state. SS sets internal counter K =0
2	←		UE CAPABILITY ENQUIRY	Including the IE "Capability update requirement".
3	→		UE CAPABILITY INFORMATION	Including the "UE radio access capability".
4				If K is equal to N304, then proceed to step 6.
5				The SS does not transmit a response and wait for T304 timer to expire. K=K+1 and goes to step 3.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message contents

Specific Message Contents

None

8.1.5.2.5 Test requirement

After step 3 the UE shall re-transmits a UE CAPABILITY INFORMATION message on the uplink DCCH, after each expiry of timer T304. The UE CAPABILITY INFORMATION message shall contain IE "UE radio access capability" indicating the settings found in PIC/PIXIT statements. After (N304) re-transmissions, the UE shall receive a UE CAPABILITY INFORMATION CONFIRM message.

8.1.5.3 UE Capability in CELL_DCH state: Failure (After N304 re-transmissions)

8.1.5.3.1 Definition

8.1.5.3.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE if the UTRAN needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. ~~In the case of a failure to~~If UE re-transmit~~s a~~ UE CAPABILITY INFORMATION in excess of N304 times, the UE initiates the cell update procedure.

Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

8.1.5.3.3 Test purpose

To confirm that the UE stops retrying to transmit a UE CAPABILITY INFORMATION message if V304 is greater than N304. It then initiates cell update procedure.

8.1.5.3.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_DCH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the "Capability update requirement" IE, the UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "UE radio access capability" IE. The SS does not respond with a UE CAPABILITY INFORMATION CONFIRM message but keeps a count on the number of messages received. When the T304 timer expires, the UE shall transmit a UE CAPABILITY INFORMATION message again. After sending (N304+1) messages, the UE shall stop sending UE CAPABILITY INFORMATION messages and initiates the cell update procedure. SS allows UE to return to "connected state" by issuing CELL UPDATE CONFIRM message on the downlink DCCH. Then UE shall reconfigured its physical channel according to the CELL UPDATE CONFIRM message and respond with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to SS.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE starts from CELL_DCH state. SS sets counter K to 0
2	←		UE CAPABILITY ENQUIRY	Use default message
3	→		UE CAPABILITY INFORMATION	Use default message
4				The SS does not transmit a response and allows T304 timer to expire. SS increments counter K If K is greater than N304, proceeds to step 5 else returns to 3.
5	→		CELL UPDATE	The UE assumes that radio link failure has occurred and transmits this message which includes IE "Cell update cause" set to "radio link failure".
6	←		CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
7				The SS configure the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
8	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

CELL UPDATE CONFIRM (Step 6)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
RRC State indicator	CELL_DCH
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink(Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- SCCPCH information for FACH	Not Present

8.1.5.3.5 Test requirement

After step 2, the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH. The UE shall re-transmit this message for N304 times.

After step 4, the UE shall initiate the cell update procedure.

After step 6, UE shall respond with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message after it has configured L1 according to the CELL UPDATE CONFIRM message in step 6.

8.1.5.4 UE Capability in CELL_FACH state: Success

8.1.5.4.1 Definition

8.1.5.4.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network(s) supported by the UE. UTRAN initiates this procedure when it needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. When the UE receives a UE CAPABILITY ENQUIRY message, the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH.

3. If during the execution of UE capability update procedure, an invalid UE CAPABILITY INFORMATION CONFIRM is received, the UE shall respond with RRC STATUS message and decide whether to re-transmit UE CAPABILITY INFORMATION message by comparing its internal counter against N304.

Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

8.1.5.4.3 Test purpose

To confirm that the UE transmits a~~n~~ UE CAPABILITY INFORMATION message after it receives a UE CAPABILITY ENQUIRY message from the SS. To confirm that the UE indicates an invalid message reception when invalid ~~erroneous downlink~~ UE CAPABILITY ENQUIRY and UE CAPABILITY INFORMATION CONFIRM messages are received. The UE shall transmit RRC STATUS message with the correct error cause value to SS.

8.1.5.4.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~.

Test Procedure

The UE is brought to the CELL_FACH state after a successful outgoing call attempt. The SS transmits an invalid ~~erroneous~~ UE CAPABILITY ENQUIRY message ~~containing invalid value in the IE "Capability update requirement"~~. After receiving such a message, the UE shall report an error using RRC STATUS message with the appropriate error cause specified. Then SS transmits a UE CAPABILITY ENQUIRY message which includes the IE "Capability update requirement". ~~The~~ After UE receives this message, it ~~and~~ transmits a UE CAPABILITY INFORMATION message on the uplink DCCH, which includes the IE "UE radio access capability". The SS transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE to complete the UE capability enquiry procedure. Then SS initiates another UE capability enquiry procedure ~~by transmitting the same UE CAPABILITY ENQUIRY message as in step 4~~. The UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH. When SS receives this message, it transmits an invalid ~~erroneous~~ UE CAPABILITY INFORMATION CONFIRM message. T~~he content of t~~his message ~~is~~ lacks ~~of~~ all IEs except IE “Message Type”. The UE shall detect a protocol error and send RRC STATUS message to report this event. After receiving the RLC layer acknowledgement PDU for this message, the UE shall re-transmit UE CAPABILITY INFORMATION message on the uplink DCCH ~~by~~ upon the expiry of T304. SS completes this test by sending an error-free UE CAPABILITY INFORMATION CONFIRM message similar to the message sent in step 6.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state after an outgoing call has been established successfully.
2	←		UE CAPABILITY ENQUIRY	See specific message contents for this message
3	→		RRC STATUS	The IE "Protocol error cause" found in IE "Protocol error information" shall be set to "ASN.1 violation or encoding error~~Information element value not comprehended~~"
4	←		UE CAPABILITY ENQUIRY	Use default message.
5	→		UE CAPABILITY INFORMATION	Use default message.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message.
7	←		UE CAPABILITY ENQUIRY	Same as in step 4.
8	→		UE CAPABILITY INFORMATION	The message content shall be the same as in step 5.
9	←		UE CAPABILITY INFORMATION CONFIRM	See specific message contents for this message
10	→		RRC STATUS	UE shall detect an error and then transmit this message on uplink DCCH.
11	→		UE CAPABILITY INFORMATION	UE shall re-transmit this message after T304~~'s expiry~~expires.
12	←		UE CAPABILITY INFORMATION CONFIRM	SS sends an error-free message to acknowledge the receipt of the uplink message.

Specific Message Contents

UE CAPABILITY ENQUIRY (Step 2)

Information Element	Value/remark
~~Capability update requirement~~ ~~- UE radio access FDD capability update requirement~~ ~~- UE radio access TDD capability update requirement~~ ~~- System specific capability update requirement list~~ ~~- System specific capability update requirement~~All IEs	 ~~TRUE~~ ~~FALSE~~ ~~invalid value~~Not Present

RRC STATUS (Step 3)

Check to is the same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
~~Identification of received messag type~~ ~~- Received message type~~ ~~- RRC transaction identifier~~ Protocol Error Information - Protocol Error Cause	 ~~Checked to see if set to "UE CAPABILITY ENQUIRY"~~ ~~Checked to see if set to the same value in the UE CAPABILITY ENQUIRY message~~ ~~Checked to see if set to "~~ASN.1 violation or encoding error ~~Information element not comprehended"~~

UE CAPABILITY INFORMATION CONFIRM (Step 9)

Information Element	Value/remark
All IEs	Not Present

RRC STATUS (Step ~~3~~10)

Check to see if the same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 ~~Checked to see if set to "~~ASN.1 violation or encoding error"

8.1.5.4.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH, reporting the error with protocol error cause set to " ASN.1 violation or encoding error ~~Information element value not comprehended~~".

After step 4 and 7 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH to respond to the downlink UE CAPABILITY ENQUIRY message.

After step 9, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 10, the UE shall re-transmit the UE CAPABILITY INFORMATION message with a similar content as in step 8 upon the expiry of T304.

8.1.5.5 UE Capability in CELL_FACH state: Success after T304 timeout

8.1.5.5.1 Definition

8.1.5.5.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network(s) supported by the UE. UTRAN initiates this action when it needs an update of the UE's UMTS capability information or of its inter-system classmark.
2. After the UE receives a UE CAPABILITY ENQUIRY message, it transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. If it fails to receive a UE CAPABILITY INFORMATION CONFIRM message, the UE re-transmits another UE CAPABILITY INFORMATION message until its internal counter V304 is greater than N304.

Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

8.1.5.5.3 Test purpose

To confirm that the UE re-transmits a UE CAPABILITY INFORMATION message until V304 is greater than N304, after the expiry of timer T304 when it fails to receive a downlink UE CAPABILITY INFORMATION CONFIRM message in response to the uplink UE CAPABILITY INFORMATION message sent.

8.1.5.5.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~.

Test Procedure

The UE is brought to CELL_FACH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the IE "Capability update requirement", the UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH that contains the IE "UE radio access capability". The SS waits and does not transmit a UE CAPABILITY INFORMATION CONFIRM message to the UE, resulting in the T304 timer to expire. SS shall observe that the UE attempts to transmit a UE CAPABILITY INFORMATION message again. The UE shall re-transmit N304 times, and SS transmits a UE CAPABILITY INFORMATION CONFIRM message to answer the last request and completes this test procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state. SS sets internal counter K =0
2	←		UE CAPABILITY ENQUIRY	Including the IE "Capability update requirement".
3	→		UE CAPABILITY INFORMATION	Including the IE "UE radio access capability".
4				If K equals N304, then proceeds to step 6. Else, continue with step 5.
5				The SS does not transmit a response and wait for T304 timer to expire. K=K+1 and goes to step 3.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message contents

Specific Message Contents

None

8.1.5.5.5 Test requirement

After step 3 the UE shall re-transmit a UE CAPABILITY INFORMATION message on the uplink DCCH, after each expiry of timer T304. The UE CAPABILITY INFORMATION message shall contain IE "UE radio access capability" with the value matching those stated in the ICS/IXIT statements. After (N304) re-transmissions, the UE shall receive a UE CAPABILITY INFORMATION CONFIRM message.

8.1.6 Direct Transfer

8.1.6.1 Direct Transfer in CELL DCH state (invalid message reception and no signalling connection exists)

8.1.6.1.1 Definition

8.1.6.1.2 Conformance requirement

The UE shall transmit an RRC STATUS message stating the ~~reason "protocol error" in IE "failure cause" and also set~~ value "ASN.1 violation or encoding error" in IE "Protocol error cause" when the UE receives a DOWNLINK DIRECT TRANFER message, which does not include any IEs except IE “Message Type”~~the IE "NAS message"~~. The UE shall transmit an RRC STATUS message including the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state" when the UE receives a DOWNLINK DIRECT TRANSFER message, with invalid IE"CN domain identity".

Reference

3GPP TS 25.331 clause 8.1.9.

8.1.6.1.3 Test purpose

To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which does not include any IEs except IE “Message Type”. ~~the IE "NAS message"~~ To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which includes an invalid IE "CN domain identity".

8.1.6.1.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the CELL_DCH state. The SS transmits an invalid DOWNLINK DIRECT TRANSFER message to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC~~, setting the value "protocol error" in IE "failure cause"~~. The error type "ASN.1 violation or encoding error" shall also be indicated in IE "Protocol error cause". The SS transmits a DOWNLINK DIRECT TRANSFER message that contains an invalid IE "CN domain identity" to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC~~, setting the value "protocol error" in IE "failure cause"~~. The error type "Message not compatible with receiver state" shall also be indicated in IE "Protocol error cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	DOWNLINK DIRECT TRANSFER	Only message type is provided.
2		→	RRC STATUS	
3		←	DOWNLINK DIRECT TRANSFER	
4		→	RRC STATUS	

Specific Message Contents

DOWNLINK DIRECT TRANSFER (Step 1)

~~The contents of DOWNLINK DIRECT TRANSFER message in this test case is identical to those in default contents of layer 3 messages for RRC tests with the following exceptions.~~

Information Element	Value/remark
~~NAS message~~All IEs	Not Present

RRC STATUS (Step 2)

Check to see if same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
~~Message Type~~	
Protocol error information ~~Other information element~~ - Protocol error cause	~~ASN.1 violation or encoding error~~ ~~Not checked~~ ASN.1 violation or encoding error

DOWNLINK DIRECT TRANSFER (Step 3)

Use the same message type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
CN domain identity NAS message	CS domain or PS domain as unselected domain Arbitrary message.

RRC STATUS (Step 4)

Check to see if same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
Message Type Identification of received messag type - Received message type - RRC transaction identifier Protocol error information ~~Other information element~~ – Protocol error cause	 DOWNLINK DIRECT TRANSFER Same value in the DOWNLINK DIRECT TRANSFER message in step 3. ~~Message not compatible with receiver state~~ ~~Not checked~~ Message not compatible with receiver state

8.1.6.1.5 Test requirement

After step 1 the UE shall transmit an RRC STATUS message on the DCCH using AM RLC ~~setting "protocol error" in IE "failure cause" and~~ setting "ASN.1 violation or encoding error" in IE "Protocol error cause".

After step 3 the UE shall transmit a n RRC STATUS message on the DCCH using AM RLC ~~setting "protocol error" in IE "failure cause" and~~ setting "Message not compatible with receiver state" in IE "Protocol error cause".

8.1.6.2 Direct Transfer in CELL FACH state (invalid message reception and no signalling connection exists)

8.1.6.2.1 Definition

8.1.6.2.2 Conformance requirement

The UE shall transmit an RRC STATUS message stating the ~~reason "protocol error" in IE "failure cause" and also set~~ value "ASN.1 violation or encoding error" in IE "Protocol error cause" when the UE receives a DOWNLINK DIRECT TRANSFER message, which does not include any IEs except IE "Message Type"~~the IE "NAS message"~~. The UE shall transmit an RRC STATUS message including the IE "Protocol error information" with the IE "Protocol error cause" set

to "Message not compatible with receiver state" when the UE receives a DOWNLINK DIRECT TRANSFER message, with invalid IE "CN domain identity".

Reference

3GPP TS 25.331 clause 8.1.9.

8.1.6.2.3 Test purpose

To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which does not include any IEs except IE "Message Type"~~the IE "NAS message"~~. To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which includes an invalid IE "CN domain identity".

8.1.6.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH (state 6-11) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~.

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a DOWNLINK DIRECT TRANSFER message to the UEand does not include all IEs except IE "Message Type"~~the IE "NAS message"~~. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC~~, setting the value "protocol error" in IE "failure cause"~~. The error type "ASN.1 violation or encoding error" shall also be indicated in IE "Protocol error cause". The SS transmits a DOWNLINK DIRECT TRANSFER message that contains an invalid IE "CN domain identity" to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC~~, setting the value "protocol error" in IE "failure cause"~~. The error type "Message not compatible with receiver state" shall also be indicated in IE "Protocol error cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		DOWNLINK DIRECT TRANSFER	Only message type is provided
2	→		RRC STATUS	
3	←		DOWNLINK DIRECT TRANSFER	
4	→		RRC STATUS	

Specific Message Contents

DOWNLINK DIRECT TRANSFER (Step 1)

~~The contents of DOWNLINK DIRECT TRANSFER message in this test case is identical to those in default contents of layer 3 messages for RRC tests with the following exceptions.~~

Information Element	Value/remark
All IEs~~NAS message~~	Not Present

RRC STATUS (Step 2)

Check to see if the same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
~~Message Type~~ Protocol error information ~~Other information element~~ – Protocol error cause	 ~~ASN.1 violation or encoding error~~ ~~Not checked~~ ASN.1 violation or encoding error

DOWNLINK DIRECT TRANSFER (Step 3)

Information Element	Value/remark
CN domain identity NAS message	CS domain or PS domain as unselected domain Arbitrary message.

RRC STATUS (Step 4)

Check to see if the same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
~~Message Type~~ Identification of received message type - Received message type - RRC transaction identifier Protocol error information ~~Other information element~~ – Protocol error cause	 DOWNLINK DIRECT TRANSFER Same value in the DOWNLINK DIRECT TRANSFER message in step 3. ~~Message not compatible with receiver state~~ ~~Not checked~~ Message not compatible with receiver state

8.1.6.2.5 Test requirement

After step 1 the UE shall transmit an RRC STATUS message on the DCCH using AM RLC ~~setting "protocol error" in IE "failure cause" and~~ setting "ASN.1 violation or encoding error" in IE "Protocol error cause".

After step 3 the UE shall transmit a n RRC STATUS message on the DCCH using AM RLC ~~setting "protocol error" in IE "failure cause" and~~ setting "Message not compatible with receiver state" in IE "Protocol error cause".

8.1.7 Security mode command

8.1.7.1 Security mode command in CELL_DCH state

8.1.7.1.1 Definition

8.1.7.1.2 Conformance requirement

1. This procedure is used to trigger the stop or start of ciphering or to command the restart of ciphering with the new ciphering configuration for the signalling radio bearers and any of radio bearers. It is also used to start integrity protection or modify integrity protection configuration~~, both~~ for the signalling ~~links and any of~~ radio bearers.

2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates the downlink activation time and new ~~integrity protection~~ciphering mode configuration, the UE shall apply the old ciphering configuration before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.

3. After the UE has ~~transmit~~transmitted ~~the~~ a SECURITY MODE COMPLETE message using the new integrity protection configuration which includes uplink activation time, it shall start~~s~~ to cipher transmission in the uplink using the new configuration at the uplink activation time.

Reference

3GPP TS 25.331 clause 8.1.12.

8.1.7.1.3 Test purpose

To confirm that the UE ~~correctly communicates to the UTRAN and~~ activates the new ciphering configurations after the stated activation time. To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that UE sends a SECURITY MODE FAILURE message when SS transmits an incompatible simultaneous SECURITY MODE COMMAND messages to UE. To confirm that UE send SECURITY MODE FAILURE message when SS transmits a SECURITY MODE COMMAND message that causes invalid configuration. To confirm that UE send SECURITY MODE FAILURE message when UE receives an invalid SECURITY MODE COMMAND message.

8.1.7.1.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in ~~the RRC connected state~~ CELL_DCH state. The SS transmits a SECURITY MODE COMMAND message ~~in~~ which does not include any IEs except IE “Message Type” ~~ciphering is requested to be activated, but the IE "Ciphering algorithm capability" is set to an unknown value~~. The UE shall ~~not trigger any ciphering algorithm and it shall~~ respond by sending SECURITY MODE FAILURE message on the DCCH. Then SS transmits a SECURITY MODE COMMAND message with~~out~~ IE "Ciphering mode ~~info~~command" ~~and IE "Integrity protection mode info"~~set to “stop”. Again the UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, SS transmits a valid SECURITY MODE COMMAND message which includes the "Downlink activation time" IE for RB2 and "Integrity check info" IE. Following that, SS immediately transmit another valid SECURITY MODE COMMAND message to UE. Then the UE shall check the integrity check info and shall start to configure ciphering in downlink according to the first valid SECURITY MODE COMMAND message. Upon the reception of the subsequent SECURITY MODE COMMAND message, the UE shall transmit SECURITY MODE FAILURE message to SS with IE "failure cause" set to "incompatible simultaneous reconfiguration". Then UE shall transmit a SECURITY MODE COMPLETE message which contains the uplink activation time for RB2 and also "Integrity check info" IE using the new integrity protection configuration. SS records the uplink ciphering activation time for RB 2. Next, SS transmits UE CAPABILITY ENQUIRY message repeatedly on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a UE CAPABILITY INFORMATION message on the uplink DCCH using RLC-AM. SS then send UE CAPABILITY INFORMATION CONFIRM message to UE. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 has elapsed. SS checks all uplink UE CAPABILITY ~~ENQUIRY~~ INFORMATION messages are integrity-protected by UIA algorithm, and that the messages contain the correct values for "Integrity ~~mode~~ check info" IE. This can be verified in SS through the reception of a correctly ciphered and integrity-protected UE CAPABILITY INFORMATION message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				RRC connected state on DCH_state.
2		←	SECURITY MODE COMMAND	See message content.
3		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Protocol Error" and IE "Protocol Error Information" shall be set to " ASN.1 violation or encoding error ~~Information element value not comprehended~~".
4		←	SECURITY MODE COMMAND	~~IE "Ciphering mode info" and IE "Integrity mode info" are set to "Not Present"~~ See message content.
5		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "invalid configuration".
6		←	SECURITY MODE COMMAND	See specific message contents.
7		←	SECURITY MODE COMMAND	See specific message contents.
8		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Incompatible simultaneous reconfiguration"~~.~~.
9		→	SECURITY MODE COMPLETE	SS verifies that this message is sent unciphered. SS records the uplink ciphering activation time for RB 2.
10		←	UE CAPABILITY ENQUIRY	SS repeats step ~~8,9~~10, 11 and ~~10~~ 12 until its internal uplink and downlink RLC SN have both surpassed the uplink and downlink ciphering activation time specified for RB2. This message is sent on the downlink DCCH using RLC-AM. ~~See specific message content.~~
11		→	UE CAPABILITY INFORMATION	UE shall send this message on the uplink DCCH using RLC-AM. ~~See specific message content.~~ SS verifies that the last UE CAPABILITY INFORMATION message is both integrity-protected and ciphered correctly.
12		←	UE CAPABILITY INFORMATION CONFIRM	
				~~Step 10 to 12 is repeated for at least one cycle.~~

Specific Message Contents

SECURITY MODE COMMAND (Step 2)

~~See notes below for the value of Y.~~

Information Element	Value/remark
~~RRC transaction identifier~~	~~0~~
~~Integrity check info~~	
~~Message authentication code~~	~~Calculated result in SS~~
~~RRC Message sequence number~~	~~0~~
~~Security Capability~~	
~~Ciphering algorithm capability~~	~~"1111111111111111"B~~
~~Integrity protection algorithm capability~~	~~"1111111111111111"B~~
~~Ciphering mode info~~	
~~Ciphering mode command~~	~~Start~~
~~Ciphering algorithm~~	~~Use one of the supported ciphering algorithms~~
~~Activation time for DPCH~~	~~Not Present~~
~~Radio bearer downlink ciphering activation time info~~	
~~RB Identity~~	~~2~~
~~RLC sequence number~~	~~Current RLC SN + Y~~
~~Integrity protection mode info~~	
~~Integrity protection mode command~~	~~Start~~
~~Downlink integrity protection activation info~~	~~Not Present~~
~~Integrity protection algorithm~~	~~If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms~~
~~Integrity protection initialisation number~~	~~0000 0000 0000 0000 H (FRESH)~~
~~CN domain identity~~All IEs	~~Supported domain~~Not Present

SECURITY MODE FAILURE (Step 3)

The same message found in Annex A shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause	
Failure cause	Protocol error
Protocol error information	
Protocol error cause	ASN.1 violation or encoding error~~Information element value not comprehended~~

SECURITY MODE COMMAND (Step 4)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	
UEA0	FALSE
UEA1	TRUE
Spare	FALSE
Integrity protection algorithm capability	
UIA1	TRUE
Spare	FALSE
Ciphering mode info	~~Not Present~~
- Ciphering mode command	Stop
Integrity protection mode info	~~Not Present~~
- Integrity protection mode command	Start
- Downlink integrity protection activation info	Not Present
- Integrity protection algorithm	UIA1
- Integrity protection initialisation number	0000 0000 0000 0000H (FRESH)
CN domain identity	Supported domain

SECURITY MODE FAILURE (Step 5)

The same message found in Annex A shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause Failure cause	 Invalid configuration

SECURITY MODE COMMAND (Step 6 and 7)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	~~If ciphering is not indicated to be active on IXIT statements in TS 34.123-2, set this to TRUE.~~
UEA0	~~If ciphering is indicated to be active on IXIT statements in TS 34.123-2, set this to TRUE.~~
UEA1	FALSE TRUE
Spare	FALSE
Integrity protection algorithm capability	
UIA1	TRUE
Spare	FALSE
Ciphering mode info	
Ciphering mode command	Start/restart
Ciphering algorithm	Use one of the supported ciphering algorithms
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	2
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	
Integrity protection mode command	Start
Downlink integrity protection activation info	Not Present
Integrity protection algorithm	~~If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms~~UIA1
Integrity protection initialisation number	0000 0000 0000 0000 H (FRESH)
CN domain identity	Supported domain

Note Y=4 (Step 6), Y= 100 (Step 7)

SECURITY MODE FAILURE (Step 8)

The same message found in Annex A shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause Failure cause	 Incompatible simultaneous reconfiguration

SECURITY MODE COMPLETE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
- Message Authentication code	Checked to see if present
- RRC Message sequence number	Checked to see if present
Uplink integrity protection activation info	
- RRC message sequence number list	Check to see if it the RRC SN for RB 0 to RB 4 are present
Radio bearer uplink ciphering activation info	
- RB Identity	2
- RLC sequence number	SS records this value. See step 8 in 'expected sequence'

~~UE CAPABILITY REQUIRY (Step 10)~~

~~The contents of UE CAPABILITY REQUIRY message in this test case is identical to the message sub-type title found in annex A.~~

~~UE CAPABILITY INFORMATION (Step 11)~~

~~The contents of UE CAPABILITY INFORMATION message in this test case is identical to the message sub-type title found in annex A.~~

~~UE CAPABILITY INFORMATION CONFIRM(Step 12)~~

~~The contents of UE CAPABILITY INFORMATION CONFIRM message in this test case is identical to the message sub-type title found in annex A.~~

~~NOTE: Y = 2 * (size of COUNTER CHECK message, after PER encoding). The unit of Y is the number of RLC AM PDU.~~

8.1.7.1.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message. ~~The UE shall be able to communicate normally with the SS, with all control data on the signalling radio bearers unciphered.~~

After step 4 the UE shall transmit a SECURITY MODE FAILURE message to report on the invalid configuration detected in the second SECURITY MODE COMMAND message.

After step 7, UE shall transmit SECURITY MODE FAILURE to SS to indicate an error due to incompatible simultaneous reconfiguration.

After step 8 the UE shall RLC-acknowledge the receipt of the first valid ~~SECRUITY~~ SECURITY MODE COMMAND message using unciphered mode and which includes calculated integrity check info. SS checks that the SECURITY MODE COMPLETE message is received unciphered and that the calculated "integrity check info" IE is correct.

After step 9 SS verifies that all uplink signalling messages on ~~RB1,~~ RB2~~, RB3 and RB4~~ are integrity protected with UIA1 algorithm.

After uplink ciphering activation time has lapsed, SS verifies that the UE CAPABILITY INFORMATION message received is integrity protected with UIA algorithm and ciphered with the algorithm indicated in the ~~second~~ SECURITY MODE COMMAND (Step ~~4~~6) message.

After downlink ciphering activation time has lapsed, SS shall apply ciphering to all downlink messages At least one more cycle between step 10 and step 12 shall be repeated correctly after activation time on both directions has lapsed and the messages on both direction shall be ciphered and integrity protected.~~UE CAPABILITY INFORMATION message received that is integrity protected with UIA algorithm and ciphered with the algorithm indicated in the second SECURITY MODE COMMAND (Step 4) message shall be transmitted. UE shall transmit the UE CAPABILITY INFORMATION message~~.

8.1.7.2 Security mode command in CELL_FACH state

8.1.7.2.1 Definition

8.1.7.2.2 Conformance requirement

1. This procedure is used to trigger the stop or start of ciphering, or to command the restart of ciphering with the new ciphering configuration for the signalling radio bearers and any of radio bearers. It is also used to start integrity protection or modify integrity protection configuration~~, both~~ for signalling radio bearers ~~link(s) and any radio access bearer(s)~~.

2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates the downlink activation time and new ~~integrity protection~~ciphering mode configuration, the UE shall apply the old ciphering configuration before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.

3. The UE shall transmit SECURITY MODE COMPLETE message using the new integrity protection configuration stated in the received SECURITY MODE COMMAND message. The SECURITY MODE COMPLETE message shall include the ciphering uplink activation time. The UE shall start to apply the new ciphering configuration on the uplink direction, after the uplink activation time has elapsed.

Reference

3GPP TS 25.331 clause 8.1.12.

8.1.7.2.3 Test purpose

To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that the UE applies the old ciphering configuration in the downlink prior to the activation time; and uses the new ciphering configuration on and after the activation time. To confirm that the UE starts to cipher its uplink transmissions after the uplink activation time stated in SECURITY MODE COMPLETE message is reached. ~~To confirm that UE aborts ciphering and integrity protection configuration when it reselect to a new cell and performs cell update procedure.~~ To confirm that UE send SECURITY MODE FAILURE message when UE receives an invalid SECURITY MODE COMMAND message.

8.1.7.2.4 Method of test

Initial Condition

System Simulator: ~~2 cells - Cell 1 is active, with the downlink transmission power shown in column marked "T0" in Table 8.1.7.2, while cell 2 is inactive~~1 cell.

UE: CELL_FACH (state 6-11) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~.

~~The UE is in the CELL_FACH state, camping onto cell 1. SS starts to broadcast BCCH on the primary CCPCH in cell 2. The UE shall find cell 2 to be more suitable for service and hence perform a cell reselection. After the completion of cell reselection, the UE shall transmits a CELL UPDATE message to the SS on the uplink CCCH of cell 2 and set IE "Cell update cause" to "Cell Reselection". After the SS receives this message, it transmits a CELL UPDATE.~~

Test Procedure

~~Table 8.1.7.2~~

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-73	-79	switched off	-73

Table 8.1.7.2 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" is to be applied subsequently.

The UE is in the RRC connected state CELL_FACH statecamping onto cell 1. The SS transmits a SECURITY MODE COMMAND message in which does not include any IEs except IE "Message Type"ciphering is requested to be activated, but the IE "Ciphering algorithm capability" is set to an unknown value. The UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, SS transmits a valid SECURITY MODE COMMAND message which includes IE "Downlink activation time" for RB2 and IE "Integrity check info". The UE shall check the integrity check info. It shall start to configure ciphering in downlink. Then SS configures its downlink transmission power settings according to columns "T1" in Table 8.1.7.2. UE shall abort ongoing integrity and ciphering reconfiguration. UE shall re-select to cell 2 and transmit CELL UPDATE message to SS with IE "cell update cause" set to "cell reselection". Then SS transmit a CELL UPDATE CONFIRM message to UE. UE shall not responds to this message. SS then transmits a SECURITY MODE COMMAND message to UE. The UE shall check the integrity check info. It shall start to configure ciphering in downlink and transmit a SECURITY MODE COMPLETE message, which contains the uplink activation time for RB2 using the new integrity protection configuration.. This message shall contain the IE "Integrity check info". SS records the uplink ciphering activation time for RB 2. Next, SS transmits UE CAPABILITY ENQUIRY message repeatedly on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a UE CAPABILITY INFORMATION message on the uplink DCCH using RLC-AM. SS confirms that the uplink UE CAPABILITY INFORMATION messages are not ciphered. SS also checks all uplink messages are integrity-protected by UIA1 algorithm, and that the messages contain the correct values for "Integrity mode check info" IE. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 have elapsed. After both the uplink and downlink ciphering activation time for RB 2 have passed, the UE shall be able to communicate with the SS using the new ciphering configurations. This can be verified in SS through the reception of a correctly ciphered and integrity-protected UE CAPABILITY INFORMATION message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_FACH state.
2		←	SECURITY MODE COMMAND	See specific message content
3		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Protocol Error" and IE "Protocol Error Information" shall be set to " ASN.1 violation or encoding error ~~Information element value not comprehended~~".
4		~~←~~	~~SECURITY MODE COMMAND~~Void	~~See specific message contents.~~
5			Void	~~SS configures the downlink power transmission setting according to column "T1" in Table 8.1.7.2.~~
6		~~→~~	~~CELL UPDATE~~ Void	~~UE re-selects to cell 2 and sends this message.~~
7		~~←~~	~~CELL UPDATE CONFIRM~~ Void	
8		←	SECURITY MODE COMMAND	See specific message contents.
9		→	SECURITY MODE COMPLETE	SS verifies that this message is sent unciphered. SS records the uplink ciphering activation time for RB 2.
10		←	UE CAPABILITY ENQUIRY	SS repeats step 10,11 and 12 until its internal uplink and downlink RLC SN have both surpassed the uplink and downlink ciphering activation time specified for RB2. This message is sent on the downlink DCCH using RLC-AM. ~~SS repeats step 10, 11 and 12 until its internal uplink and downlink RLC sequence numbers have both surpassed the uplink and downlink ciphering activation times specified for RB2. This message is sent on the downlink DCCH using RLC-AM. See specific message content.~~
11		→	UE CAPABILITY INFORMATION	UE shall send this message on the uplink DCCH using RLC-AM. SS verifies that the last UE CAPABILITY INFORMATION message is both integrity-protected and ciphered correctly.~~UE shall send this message on the uplink DCCH using RLC-AM. See specific message content. SS verifies that the last COUNTER CHECK RESPONSE message is both integrity-protected and ciphered correctly.~~
12		←	UE CAPABILITY INFORMATION CONFIRM	~~SS verifies that the last COUNTER CHECK RESPONSE message is both integrity-protected and ciphered correctly.~~

Specific Message Contents

SECURITY MODE COMMAND (Step 2)

~~See notes below for the value of Y.~~

Information Element	Value/remark
~~RRC transaction identifier~~	~~0~~
~~Integrity check info~~	
~~Message authentication code~~	~~Calculated result in SS~~
~~RRC Message sequence number~~	~~0~~
~~Security Capability~~	
~~Ciphering algorithm capability~~	~~"1111111111111111"B "1111111111111111"B~~
~~Integrity protection algorithm capability~~	
~~Ciphering mode info~~	
~~Ciphering mode command~~	~~Start~~
~~Ciphering algorithm~~	~~Use one of the supported ciphering algorithms~~
~~Activation time for DPCH~~	~~Not Present~~
~~Radio bearer downlink ciphering activation time info~~	
~~RB Identity~~	~~2~~
~~RLC sequence number~~	~~Current RLC SN + Y~~
~~Integrity protection mode info~~	
~~Integrity protection mode command~~	~~Start~~
~~Downlink integrity protection activation info~~	~~Not Present~~
~~Integrity protection algorithm~~	~~If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms~~
~~Integrity protection initialisation number~~	~~0000 0000 0000 0000 H (FRESH)~~
~~CN domain identity~~All IEs	~~Supported domain~~Not Present

SECURITY MODE COMMAND (Step ~~4 and~~ 8)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	
	~~If ciphering is not indicated to be active on IXIT statements in TS 34.123-2, set this to TRUE.~~
UEA0	~~If ciphering is indicated to be active on IXIT statements in TS 34.123-2, set this to TRUE.~~
UEA1	FALSE TRUE
Spare	FALSE
Integrity protection algorithm capability	
UIA1	TRUE
Spare	FALSE
Ciphering mode info	
Ciphering mode command	Start/restart
Ciphering algorithm	Use one of the supported ciphering algorithms
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	2
RLC sequence number	Current RLC SN + ~~Y~~4
Integrity protection mode info	
Integrity protection mode command	Start
Downlink integrity protection activation info	Not Present
Integrity protection algorithm	~~If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms~~UIA1
Integrity protection initialisation number	0000 0000 0000 0000 H (FRESH)
CN domain identity	Supported domain

~~CELL UPDATE~~

~~Use the same message sub-type found in Annex A, with the following exceptions:~~

~~Information Element~~	~~Value/remark~~
~~U-RNTI~~	
~~- SRNC Identity~~	~~Check to see if set to '0000 0000 0001'~~
~~- S-RNTI~~	~~Check to see if set to '0000 0000 0000 0000 0001'.~~
~~Cell Update Cause~~	~~Check to see if set to 'Cell Reselection'~~

~~CELL UPDATE CONFIRM (Step 4 and 18)~~

~~Use the same message sub-type found in Annex A, with the following exceptions:~~

~~Information Element~~	~~Value/remark~~
~~RRC State Indicator~~	~~CELL_FACH~~

SECURITY MODE COMPLETE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
- Message Authentication code	Checked to see if present
- RRC Message sequence number	Checked to see if present
Uplink integrity protection activation info	
- RRC message sequence number list	Check to see if it the RRC SN for RB 0 to RB 4 are present
Radio bearer uplink ciphering activation info	
- RB Identity	2
- RLC sequence number	SS records this value. See step 8 in 'expected sequence'

~~UE CAPABILITY REQUIRY (Step 10)~~

~~The contents of UE CAPABILITY REQUIRY message in this test case is identical to the message sub-type title found in Annex A.~~

~~UE CAPABILITY INFORMATION (Step 11)~~

~~The contents of UE CAPABILITY INFORMATION message in this test case is identical to the message sub-type title found in Annex A.~~

~~UE CAPABILITY INFORMATION CONFIRM(Step 12)~~

~~The contents of UE CAPABILITY INFORMATION CONFIRM message in this test case is identical to the message sub-type title found in Annex A.~~

~~NOTE: Y = 2 * (size of COUNTER CHECK message, after PER encoding). The unit of Y is the number of RLC AM PDU.~~

8.1.7.2.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message. ~~The UE shall be able to communicate normally with the SS, with all control data on the signalling radio bearers unciphered.~~

~~After step 5, UE shall reselect to cell 2 and transmit CELL UPDATE message to SS with IE "cell update cause" set to "cell reselection".~~

After step 8 the UE shall RLC-acknowledge the receipt of the SECRUITY MODE COMMAND message using unciphered mode and which includes calculated integrity check info. SS checks that the SECURITY MODE COMPLETE message is received unciphered and that the calculated MAC-I values in "integrity check info" IE is correct.

After step 9 SS verifies that all uplink signalling messages on ~~RB1,~~ RB2~~, RB3 and RB4~~ are integrity protected with UIA1 algorithm.

After uplink ciphering activation time has lapsed, SS verifies that the UE CAPABILITY INFORMATION message received is integrity protected with UIA algorithm and ciphered with the algorithm indicated in the SECURITY MODE COMMAND (Step 8) message.

After downlink ciphering activation time has lapsed, SS shall apply ciphering to all downlink messages. At least one more cycle between step 10 and step 12 shall be repeated correctly after activation time on both directions has lapsed and the messages on both directions shall be ciphered and integrity protected.

~~After step 11 SS verifies that the last UE CAPABILITY INFORMATION message received is integrity protected with UIA1 algorithm and ciphered with the algorithm indicated in the second SECURITY MODE COMMAND (Step 4) message.~~

8.1.8 Counter check

8.1.8.1 Counter check in CELL_DCH state

8.1.8.1.1 Definition

8.1.8.1.2 Conformance requirement

When the UE receives a COUNTER CHECK message that includes matched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and omitting "RB COUNT-C information" IE in this message.

When the UE receives a COUNTER CHECK message that includes any mismatched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and specifies the current COUNT-C information of the RAB(s) with mismatched values.

When the UE receives an invalid COUNTER CHECK message, the UE shall perform procedure specific error handling.

Reference

3GPP TS 25.331 clause 8.1.15.

8.1.8.1.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message after it receives a COUNTER CHECK message from the SS. To confirm that the UE responds to the reception of an invalid downlink COUNTER CHECK message by transmitting a RRC STATUS message on the uplink DCCH, stating the correct error cause value in message.

8.1.8.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-10) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~.

Test Procedure

The UE is brought to the CELL_DCH state after a successful outgoing call attempt. The SS transmits an invalid ~~erroneous~~ COUNTER CHECK message. T~~he content of t~~his message ~~is~~ lacks ~~of~~ all ~~mandatory~~ IEs except IE "Message Type". The UE shall detect a protocol error and send RRC STATUS message to report this event. Next, the SS transmits a COUNTER CHECK message that includes the current COUNT-C MSB information in each radio access bearer. The UE shall react by sending a COUNTER CHECK RESPONSE message on the uplink DCCH, which does not include "RB COUNT-C information" IE. The SS transmits a COUNTER CHECK message which includes the current COUNT-C MSB information reversed all the bits in each radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established. The SS transmits a COUNTER CHECK message which includes a different radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2	←		COUNTER CHECK	See specific message contents for this message
3	→		RRC STATUS	UE shall detect a protocol error and then transmit this message.
4	←		COUNTER CHECK	See specific message content.
5	→		COUNTER CHECK RESPONSE	The message shall not include the IE "RB COUNT-C information".
6	←		COUNTER CHECK	See specific message content.
7	→		COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".
8	←		COUNTER CHECK	See specific message content.
9	→		COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".

Specific Message Contents

COUNTER CHECK (Step 2)

Information Element	Value/remark
All IEs~~RRC transaction identifier~~	Not Present

RRC STATUS (Step 3)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 Checked to see if set to "ASN.1 violation or encoding error"

COUNTER CHECK (Step 4)

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info RB COUNT-C MSB information - RB identity - COUNT-C MSB uplink - COUNT-C MSB downlink	 0 Calculated value 20 Current COUNT-C MSB for RB#20 in uplink Current COUNT-C MSB for RB#20 in downlink

COUNTER CHECK RESPONSE (Step 5)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	Check to if this IE is absent

COUNTER CHECK (Step 6)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 20
- COUNT-C MSB uplink	Toggle all bits of the current COUNT-C MSB in uplink for RB#20
- COUNT-C MSB downlink	Toggle all bits of the current COUNT-C MSB in downlink for RB#20

COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink

COUNTER CHECK (Step 8)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 25
- COUNT-C MSB uplink	Arbitrary COUNT-C MSB in uplink for RB#25
- COUNT-C MSB downlink	Arbitrary COUNT-C MSB in downlink for RB#25

COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink
- RB identity	Check to see if set to 25
- COUNT-C uplink	Check to see if COUNT-C MSB is set to COUNT-C ~~MSG~~ MSB in uplink for RB#25 in step 8 and LSB is fill with '0'
- COUNT-C downlink	Check to see if COUNT-C MSB is set to COUNT-C ~~MSG~~ MSB in downlink for RB#25 in step 8 and LSB is fill with '0'

8.1.8.1.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 4 the UE shall transmit a COUNTER CHECK RESPONSE message which does not includes the IE "RB COUNT-C information" to indicates that a matched comparison result is obtained.

After step 6, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that a mismatch in COUNT-C value is detected in RB#20.

After step 8, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that RB#25 is not found in variable ESTABLISHED_RABS and RB#20 is not found in IE "RB COUNT-C MSB information".

8.1.8.2 Counter check in CELL_FACH state

8.1.8.2.1 Definition

8.1.8.2.2 Conformance requirement

When the UE receives a COUNTER CHECK message that includes matched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and omitting "RB COUNT-C information" IE in this message.

When the UE receives a COUNTER CHECK message that includes any mismatched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and specifies the current COUNT-C information of the RAB(s) with mismatched values.

When the UE receives an invalid COUNTER CHECK message, the UE shall perform procedure specific error handling.

Reference

3GPP TS 25.331 clause 8.1.15.

8.1.8.2.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message after it receives a COUNTER CHECK message from the SS. To confirm that the UE responds to the reception of an invalid downlink COUNTER CHECK message by transmitting a RRC STATUS message on the uplink DCCH, stating the correct error cause value in message.

8.1.8.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108~~, depending on the CN domain(s) supported by the UE~~.

Test Procedure

The UE is brought to the CELL_FACH state after a successful outgoing call attempt. The SS transmits an invalid ~~erroneous~~ COUNTER CHECK message. T~~he content of t~~his message ~~is~~ lacks ~~of~~ all ~~mandatory~~ IEs. The UE shall detect a protocol error and send RRC STATUS message to report this event. Next, the SS transmits a COUNTER CHECK message that includes the current COUNT-C MSB information in each radio access bearer. The UE shall react by sending a COUNTER CHECK RESPONSE message on the uplink DCCH, which does not include "RB COUNT-C information" IE. The SS transmits a COUNTER CHECK message, which includes the current COUNT-C MSB information for each radio bearer but with all the bits reversed. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established. The SS transmits a COUNTER CHECK message which includes a different radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state after an outgoing call has been established successfully.
2	←		COUNTER CHECK	See specific message contents for this message
3	→		RRC STATUS	UE shall detect a protocol error and then transmit this message.
4	←		COUNTER CHECK	See specific message content.
5	→		COUNTER CHECK RESPONSE	The message shall not include the IE "RB COUNT-C information".
6	←		COUNTER CHECK	See specific message content.
7	→		COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".
8	←		COUNTER CHECK	See specific message content.
9	→		COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".

Specific Message Contents

COUNTER CHECK (Step 2)

Information Element	Value/remark
All IEs~~RRC transaction identifier~~	Not Present

RRC STATUS (Step 3)

Information Element	Value/remark
Message Type	
Protocol Error Information	
- Protocol Error Cause	Checked to see if set to "ASN.1 violation or encoding"

COUNTER CHECK (Step 4)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Current COUNT-C MSB for RB#20 in uplink
- COUNT-C MSB downlink	Current COUNT-C MSB for RB#20 in downlink

COUNTER CHECK RESPONSE (Step 5)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	Check to if this IE is absent

COUNTER CHECK (Step 6)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Toggle all bits of the current COUNT-C MSB in uplink for RB#20
- COUNT-C MSB downlink	Toggle all bits of the current COUNT-C MSB in downlink for RB#20

COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink

COUNTER CHECK (Step 8)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 25
- COUNT-C MSB uplink	Arbitrary COUNT-C MSB in uplink for RB#25
- COUNT-C MSB downlink	Arbitrary COUNT-C MSB in downlink for RB#25

COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink
- RB identity	Check to see if set to 25
- COUNT-C uplink	Check to see if COUNT-C MSB is set to COUNT-C ~~MSG~~ MSB in uplink for RB#25 in step 8 and LSB is fill with '0'
- COUNT-C downlink	Check to see if COUNT-C MSB is set to COUNT-C ~~MSG~~ MSB in downlink for RB#25 in step 8 and LSB is fill with '0'

8.1.8.2.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 4 the UE shall transmit a COUNTER CHECK RESPONSE message which does not includes the IE "RB COUNT-C information" to indicates that a matched comparison result is obtained.

After step 6, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that a mismatch in COUNT-C value is detected in RB#20.

After step 8, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that RB#25 is not found in variable ESTABLISHED_RABS and RB#20 is not found in IE "RB COUNT-C MSB information".

8.1.9 Signalling Connection Release Request

8.1.9.1 Definition

8.1.9.2 Conformance requirement

The UE shall initiate the signalling connection release procedure when the higher layer entities in the UE request to release one or more signalling session (one example of such case is location update failure). In this case, the UE shall transmit a SIGNALLING CONNECTION RELEASE REQUEST message, which includes the CN domain identity of the connection flow to be released.

Reference

3GPP TS 25.331 clause 8.1.14.

8.1.9.3 Test purpose

To confirm that the UE transmits a SIGNALLING CONNECTION RELEASE REQUEST message after it fails to receive a response for the LOCATION UPDATING REQUEST message.

8.1.9.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Switched off (state 1) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is turned on and it shall find a suitable cell to camp on. The UE shall initiate a location updating procedure. The UE shall establish an RRC connection and transmits a LOCATION UPDATING REQUEST message using the INITIAL DIRECT TRANSFER message. The SS does not respond to this message, and the UE shall send a SIGNALLING CONNECTION RELEASE REQUEST message which includes the CN domain identity with the same value as that in the INITIAL DIRECT TRANSFER message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is powered on.
2	→		RRC CONNECTION REQUEST	UE shall initiate the location updating procedure.
3	←		RRC CONNECTION SETUP	
4				The UE configures the layer 2 and layer 1.
5	→		RRC CONNECTION SETUP COMPLETE	
6	→		INITIAL DIRECT TRANSFER (LOCATION UPDATING REQUEST)	LOCATION UPDATE REQUEST is embedded in this message transmission.
7				The SS does not respond and waits until the timer for location update procedure expires.
8	→		SIGNALLING CONNECTION RELEASE REQUEST	

Specific Message Content

SIGNALLING CONNECTION RELEASE REQUEST (Step 8)

Information Element	Value/remark
CN domain identity	Check to see if this value is the as same as in the uplink INITIAL DIRECT TRANSFER message.

8.1.9.5 Test requirement

After step 1 the UE shall initiate the LOCATION UPDATING procedure and establish an RRC connection.

After step 7 the UE shall transmit a SIGNALLING CONNECTION RELEASE REQUEST message which includes the same CN domain identity as that found in the INITIAL DIRECT TRANSFER message.

8.2 Radio Bearer control procedure

8.2.1 Radio Bearer Establishment

8.2.1.1 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Success ~~(Data integrity protection algorithm is not applied)~~

8.2.1.1.1 Definition

8.2.1.1.2 Conformance requirement

The UE shall correctly set up a new radio bearer according to a RADIO BEARER SETUP message and responds with a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC~~communicate with the UTRAN for its implementation~~.

~~(This is the case where data integrity protection algorithm is not applied.)~~

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.1.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message ~~received from the SS~~.

8.2.1.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) or PS_DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in ~~the~~ CELL_DCH state, after the test operator is prompted to make an out-going call. Before step 1, only signalling radio bearers have been established. The SS transmits a RADIO BEARER SETUP message to the UE ~~after it sets up L1 including the start of tx/rx~~. This message requests the establishment of ~~RABs for carrying the traffic of the speech call~~radio access bearer. After the UE receives this message, it configures them and establishes a radio access

bearer. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. ~~Then the UE and the SS enters the communicating state.~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	This message do not contain IE "integrity check info" and "integrity protection mode info"
2	→		RADIO BEARER SETUP COMPLETE	This message do not contain "integrity check info" and "Uplink integrity activation info
~~3~~				~~To confirm the communication.~~

Specific Message Contents

~~For RADIO BEARER SETUP in step 1, using the message sub-type indicated as "Speech in CS" or "Non-speech in CS" found in annex A.~~None.

8.2.1.1.5 Test requirement

After step ~~2~~ 1 the UE shall ~~communicate with the SS on the radio bearer for its implementation~~transmit a RADIO BEARER SETUP COMPLETE message.

8.2.1.2 ~~Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Success (Effected Data integrity protection algorithm)~~Void

~~8.2.1.2.1 Definition~~

~~8.2.1.2.2 Conformance requirement~~

~~The UE shall correctly set up a radio bearer according to a RADIO BEARER SETUP message, which applies data integrity function, and then communicate with the UTRAN for its implementation.~~

~~Reference~~

~~3GPP TS 25.331 clauses 8.2.1 and 8.5.11.~~

~~8.2.1.2.3 Test purpose~~

~~To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message which contains IE "Integrity check info" and IE "Integrity protection mode info" received from the SS.~~

~~8.2.1.2.4 Method of test~~

~~Initial Condition~~

~~System Simulator: 1 cell.~~

~~UE: CS_DCCH_DCH (state 6-5) as specified in clause 7.4 of TS 34.108 and data integrity algorithm is not applied.~~

~~Test Procedure~~

~~The UE is in the CELL_DCH state, after the test operator is prompted to make an out-going data call. Before step 1, only signalling radio bearers have been established. The SS transmits a RADIO BEARER SETUP message which is including IE "integrity check info" and "integrity protection mode info" to the UE after it sets up L1 including the start of tx/rx. This message requests the establishment of RABs for carrying the traffic of the call. After the UE receives this message, it configures them and establishes a radio bearer. Finally the UE transmits a RADIO BEARER SETUP~~

COMPLETE message which is including IE "integrity check info" using AM RLC. Then the UE and the SS enters the communicating state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	This message contain IE "integrity check info" and "integrity protection mode info"
2		→	RADIO BEARER SETUP COMPLETE	This message contain "integrity check info"
3				To confirm the communication.

Specific Message Contents

For RADIO BEARER SETUP in step 1, using the message sub-types indicated as "Speech in CS" or "Non-speech in CS" as found in annex A.

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical with the following exceptions:

Information Element	Value/remark
Integrity check info	
- Message authentication code	Bit string (32) - MAC-I See TS 33.102
- RRC Message sequence number	0
Integrity protection mode info	Present
- Integrity protection mode command	"Start"
- Downlink integrity protection activation info	Not present (It is needed only when the IE "Integrity protection mode command" has the value "modify".)
- integrity protection algorithm	UIA1
- integrity protection initialisation number	Bit string (32) - FRESH See TS 33.102

RADIO BEARER SETUP COMPLETE

Information Element	Value/remark
Integrity check info	
- Message authentication code	Not checked(MAC-I See TS 33.102)
- RRC Message sequence number	Not checked
Uplink Integrity protection activation info	Not checked
Hyper Frame Number	Not checked

8.2.1.2.5 Test requirement

After step 2 the UE shall communicate with the SS on the radio bearer for its implementation. This can be verified by the correct reproduction of the u-plane data transmitted and received between the test operator and SS.

8.2.1.3 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Unsupported configuration)

8.2.1.3.1 Definition

8.2.1.3.2 Conformance requirement

The UE shall keep its ~~old~~ current configuration when the UE receives a RADIO BEARER SETUP message which includes unsupported configuration parameters and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.3.3 Test purpose

To confirm that the UE keeps its configuration and transmits a RADIO BEARER SETUP FAILURE message in case of receiving a RADIO BEARER SETUP message which includes parameters of its unsupported configuration.

8.2.1.3.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH_DCH (state 6-5) or PS_DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the domain(s) supported by the UE.

Test Procedure

The UE is in ~~the~~ CELL_DCH state. The SS transmits a RADIO BEARER SETUP message ~~as~~ in which the frequency cannot be supported by the UE. After the UE receives this message, it transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	Including the unsupported configuration for the UE.
2	→		RADIO BEARER SETUP FAILURE	The UE does not change the configuration.

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is indicated as ~~"Speech in CS" or~~ "Non-speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108 with the following exceptions:

Information Element	Value/remark
Frequency info - UARFCN uplink (Nu) - UARFCN downlink (Nd)	 ~~163830.~~ ~~Not Present.~~950

RADIO BEARER SETUP FAILURE

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type Failure cause ~~Other information element~~	 Configuration unsupported ~~Not checked~~

8.2.1.3.5 Test requirement

After step 1 the UE ~~shall keep its configuration and~~ transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause".

8.2.1.4 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Physical channel Failure and successful reversion to old configuration)

8.2.1.4.1 Definition

8.2.1.4.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to configure the new radio bearer ~~by the~~before T312 ~~expiry~~ expires and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.4.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, if the UE fails to reconfigure the radio bearer according to the RADIO BEARER RECONFIGURATION message before timer T312 expires.~~when the UE fails to configure the new radio bearer following detection of physical channel failure after T312 expiry.~~

8.2.1.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) or PS_DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the domain(s) supported by the UE.

Test Procedure

The UE is in ~~the~~ CELL_DCH state. The SS transmits a RADIO BEARER SETUP message to the UE and SS keep its old dedicated channel configuration~~does not configure the new radio bearer~~. Then after T312 expiry, the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	The SS keeps its old L1 configuration after transmitting this message~~does not configure the new radio bearer stated in the message~~.
2				The UE does not configure the new radio access bearer and reverts to the old configuration.
3	→		RADIO BEARER SETUP FAILURE	UE shall transmit this message using the old ~~RRC signalling bearer operating in RLC-AM mode~~configuration.

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is indicated as ~~"Speech in CS" or~~ "Non-speech in CS" as found in annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108.

RADIO BEARER SETUP FAILURE

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
~~Message Type~~	
Failure cause	Physical channel failure
~~Other information element~~	~~Not checked~~

8.2.1.4.5 Test requirement

After step 2 the UE shall ~~revert to the old configuration and~~ transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

8.2.1.5 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Physical channel Failure and reversion failure)

8.2.1.5.1 Definition

8.2.1.5.2 Conformance requirement

The UE shall perform a cell update procedure when the UE fails to revert to the old configuration after the detection of physical channel failure in the radio bearer establishment procedure. After the UE complete cell update procedure, the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.5.3 Test purpose

To confirm that UE transmits RADIO BEARER SETUP FAILURE message after it completes a cell update procedure due to a physical channel failure in the radio bearer establishment procedure.

8.2.1.5.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH_DCH (state 6-5) or PS_DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, ~~in cell No.1~~depending on the domain(s) supported by the UE.

Test Procedure

The UE is in ~~the~~ CELL_DCH state ~~in cell 1~~. SS transmits a RADIO BEARER SETUP message to the UE. After transmitting the RADIO BEARER SETUP message, the SS shall not configure its dedicated physical channel ~~L1~~ in accordance ~~to~~ with the settings in the message and release the old configuration after the RLC acknowledgement. The UE recognizes that it cannot ~~configure~~ synchronise on the new ~~radio bearer~~physical channel and wants to revert to the old configuration, but the UE cannot revert to the old configuration ~~because the SS shall not use the old configuration~~. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value of IE "failure cause" to " physical channel failure".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2				The SS does not configure new radio access bearer~~the dedicated physical channel in accordance with the RADIO BEARER SETUP message~~ and shall ~~not use~~release the ~~old~~ configuration.
3	→		CELL UPDATE	The value "radio link failure" shall be set in IE "Cell update cause".
4	←		CELL UPDATE CONFIRM	This message includes IE "Physical channel information elements".
5				The SS configures the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
6	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7	→		RADIO BEARER SETUP FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is indicated as ~~"Speech in CS" or~~ "Non-speech in CS" as found in ~~annex~~ Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108.

CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
~~U-RNTI~~	
~~- SRNC Identity~~	~~Check to see if set to '0000 0000 0001'~~
~~- S-RNTI~~	~~Check to see if set to '0000 0000 0000 0000 0001'~~
Cell Update Cause	"radio link failure"

CELL UPDATE CONFIRM (Step 4)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
~~U-RNTI~~	~~Same as CELL UPDATE message in step 3~~
RRC State indicator	CELL_DCH
UplinkDPCH Info	Same as RRC CONNECTION SETUP message used to move to initial condition
Downlink information for each radio links	Same as RRC CONNECTION SETUP message used to move to initial condition
~~Frequency info~~	
~~- UARFCN uplink(Nu)~~	~~Reference to TS34.108 clause 5.1 Test frequencies~~
~~- UARFCN downlink(Nd)~~	~~Reference to TS34.108 clause 5.1 Test frequencies~~
~~Maximum allowed UL TX power~~	~~33dBm~~
~~CHOICE Mode~~	~~FDD~~
~~Downlink information for each radio links~~	
~~- Primary CPICH info~~	
~~- Primary scrambling code~~	~~100~~
~~- PDSCH with SHO DCH info~~	~~Not Present~~
~~- PDSCH code mapping~~	~~Not Present~~
~~- Downlink DPCH info for each RL~~	
~~- Primary CPICH usage for channel estimation~~	~~Primary CPICH may be used~~
~~- DPCH frame offset~~	~~0 chips~~
~~- Secondary CPICH info~~	~~Not Present~~
~~- DL channelisation code~~	
~~- Secondary scrambling code~~	~~2~~
~~- Spreading factor~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- Code number~~	~~SF 1(SF is reference to TS34.108 clause 6.10 Parameter Set)~~
~~- Scrambling code change~~	~~No change~~
~~- TPC combination index~~	~~0~~
~~- SSDT Cell Identity~~	~~-a~~
~~- Closed loop timing adjustment mode~~	~~Not Present~~
~~- SCCPCH information for FACH~~	~~Not Present~~

RADIO BEARER SETUP FAILURE (Step 7)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	"RADIO BEARER SETUP FAILURE"
Failure cause	"physical channel failure"
~~Other information element~~	~~Not checked~~

8.2.1.5.5 Test requirement

After step 2 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "radio link failure".

After step 5 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to " physical channel failure".

8.2.1.6 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.1.6.1 Definition

8.2.1.6.2 Conformance requirement

If the UE receives a RADIO BEARER SETUP message ~~whilst reconfiguring due to a radio bearer message other than RADIO BEARER SETUP, then it shall keep its configuration as if the RADIO BEARER SETUP message had not been received.~~during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER SETUP message, it shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC

Reference

3GPP TS 25.331 clause 8.2.1, clause 8.6.3.11.

8.2.1.6.3 Test purpose

To confirm that if the UE receives a RADIO BEARER SETUP message ~~whilst~~ during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received and complete the reconfiguration procedure according to the previously received message.

8.2.1.6.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH_DCH (state 6-9) or PS_DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in ~~the~~ CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER SETUP message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the RADIO BEARER SETUP message, the UE shall keep ~~the~~ its current configuration as if it had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS ~~receives~~ acknowledges the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters upon the specified activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Including IE "Activation TimeUplink DPCH info"
2	←		RADIO BEARER SETUP	The SS send this message before the expiry of activation time specified in the message of step 1.
3	→		RADIO BEARER SETUP FAILURE	The UE does not change the configuration according to the RADIO BEARER SETUP messagebecause of receiving the RADIO BEARER SETUP message.
4	→		RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

For RADIO BEARER RECONFIGURATION message in step 1, use the message sub-type indicated as "Speech in CS" or "Non speech in CS" or "Packet to CELL_DCH from CELL_DCH in PS" as found in Annex Afound in Annex A, with the exception of the following Information Elements:

RADIO BEARER RECONFIGURATION (Step 1)

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256
Uplink DPCH Info - Scrambling code number	 1

RADIO BEARER SETUP (Step 2)

The contents of RADIO BEARER SETUP message in this test case is indicated as "Speech in CS" or "Non-speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108 with the following exceptions:

Information Element	Value/remark
Activation Time	Not Present
Uplink DPCH Info - Scrambling code number	 2

RADIO BEARER SETUP FAILURE

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	
Failure case	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.1.6.5 Test requirement

After step 1 The SS transmits a RADIO BEARER SETUP message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

~~After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.~~

8.2.1.7 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.1.7.1 Definition

8.2.1.7.2 Conformance requirement

The UE shall keep its old configuration when the UE receives an invalid RADIO BEARER SETUP message, which does not includes any ~~the~~ IEs except IE “Message Type”~~undefined value in the mandatory IE "UTRAN cycle length coefficient" and criticality is defined as "Reject"~~. Then it transmits a RADIO BEARER SETUP FAILURE message which is set to "protocol error" in IE "failure cause" and is set to "ASN.1 violation or encoding error~~Information element value not comprehended~~" in IE "Protocol error cause".

The UE shall keep existing configuration ~~before~~ upon reception of a RADIO BEARER SETUP message which includes some IEs set to give an invalid ~~value~~configuration, and then the UE shall transmit a RADIO BEARER SETUP FAILURE message including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.7.3 Test purpose

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives an invalid RADIO BEARER SETUP message which does not include any IEs except IE “Message Type”~~indicates the undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" whose criticality is defined as "Reject"~~.

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER SETUP message including some IEs set to give an invalid ~~value~~configuration.

8.2.1.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) or PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in ~~the~~ CELL_DCH state. The SS transmits an invalid RADIO BEARER SETUP message to the UE which does not includes any IEs except IE “Message Type”~~indicates a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" whose criticality is defined as "Reject"~~. The UE keeps the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "protocol error" in IE "failure cause", and is set to " ASN.1 violation or encoding error ~~Information element value not comprehended~~" in IE "Protocol error cause". The UE keeps ~~initial~~ current configuration ~~when~~ after SS transmits a RADIO BEARER SETUP message including some IEs set to give an invalid ~~value~~configuration. Then UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value "~~-~~invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	See specific message content.
2	→		RADIO BEARER SETUP FAILURE	The UE does not change ~~the~~ its configuration.
3	←		RADIO BEARER SETUP	This message includes IE set to invalid value.
4	→		RADIO BEARER SETUP FAILURE	The UE does not change ~~the~~ its configuration.
~~5~~	→		~~RADIO BEARER SETUP FAILURE~~	~~The IE "failure cause" shall be set to "invalid configuration"~~

Specific Message Contents

RADIO BEARER SETUP (Step 1)

~~The contents of RADIO BEARER SETUP message in this test case is identical as "Speech in CS" or "Non-speech in CS" as found in annex A with the following exceptions:~~

Information Element	Value/remark
~~UTRAN DRX cycle length coefficient~~All IEs	~~Out of range value.~~Not Present

RADIO BEARER SETUP FAILURE (Step 2)

Information Element	Value/remark
Message Type	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	ASN.1 violation or encoding error~~Information element value not comprehended~~
Other information element	Not checked

RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical as ~~"Speech in CS" or~~ "Non-speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108 with the following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024
~~Added or Reconfigured UL TrCH information~~	
~~- Uplink transport channel type~~	~~DCH~~
~~- UL Transport channel identity~~	~~1~~
~~- TFS~~	
~~- Dynamic Transport format information~~	~~(This IE is repeated for TFI number)~~
~~- RLC size~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- CHOICE Logical Channel list~~	~~Explicit List~~
~~- RB identity~~	~~2~~
~~- LogicalChannel~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~

RADIO BEARER SETUP FAILURE (Step 5)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
~~Other information element~~	~~Not checked~~

8.2.1.7.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "protocol error" in IE "failure cause" and set to " ASN.1 violation or enoding error ~~Information element value not comprehended~~" in IE "Protocol error cause".

~~After step 3 the UE shall keep its old configuration~~

After step ~~4~~ 3 the UE shall keep its old configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

8.2.1.8 Radio Bearer Establishment for transition from CELL_DCH to CELL_FACH: Success

8.2.1.8.1 Definition

8.2.1.8.2 Conformance requirement

The UE shall correctly set up a radio bearer according to a RADIO BEARER SETUP message and responds with a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC~~communicate with the UTRAN for its implementation~~.

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.8.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message~~ received from the SS~~.

8.2.1.8.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_DCH state, after the test operator is asked to initiate a packet-switched data call. The SS transmits a RADIO BEARER SETUP message to the UE ~~after it sets up L1~~. After the UE receives this message, it transits from CELL_DCH to CELL_FACH state ~~configures them and establishes a radio bearer~~. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. Then the UE and the SS enters the communicating state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	SS requests test operator to make an outgoing packet-switched data call.
2	→		RADIO BEARER SETUP COMPLETE	The UE selects PRACH and S-CCPCH ~~using~~ indicated in SIB5 or SIB6 after entering CELL FACH state.
~~3~~	→		~~RADIO BEARER SETUP COMPLETE~~	
~~4~~				~~To confirm the communication between UE and SS, based on the exchange of packets.~~

Specific Message Contents

For RADIO BEARER SETUP message in step 1, use the message sub-type indicated as "Packet to CELL_FACH from CELL_DCH in PS" found in ~~annex~~ Annex A.

8.2.1.8.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER SETUP COMPLETE message. ~~After step 3 the UE shall communicate with the SS on the radio bearer for its implementation.~~

8.2.1.9 Radio Bearer Establishment for transition from CELL_DCH to CELL_FACH: Success (Cell re-selection)

8.2.1.9.1 Definition

8.2.1.9.2 Conformance requirement

The UE shall initiate the cell update procedure when the UE performs cell reselection during a radio bearer establishment procedure. After the UE completes cell update procedure, the UE shall continue to perform the radio bearer establishment procedure and correctly establish the radio bearer.

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.9.3 Test purpose

To confirm that the UE transmits RADIO BEARER SETUP COMPLETE message ~~in cell 2~~ after it completes a cell update procedure.

8.2.1.9.4 Method of test

Initial Condition

System Simulator: ~~2~~ 1 cell~~s~~ - Cell 1 is active~~, Cell 2 is inactive~~.

UE: PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108.

Test Procedure

~~Table 8.2.1.9~~

~~Parameter~~	~~Unit~~	~~Cell 1~~		~~Cell 2~~	
		~~T0~~	~~T1~~	~~T0~~	~~T1~~
~~UTRA RF Channel Number~~		~~Ch. 1~~		~~Ch. 1~~	
~~CPICH RSCP~~	~~dBm~~	~~-73~~	~~-79~~	~~switched off~~	~~-73~~

~~Table 8.2.1.9 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.~~

The UE is in ~~the~~ CELL_DCH state ~~in cell 1~~. ~~The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.1.9 and broadcast BCCH on the primary CCPCH in cell 2.~~ The SS transmits a RADIO BEARER SETUP message which includes IE"Primary CPICH info" and no dedicated physical channel information, to request the UE to transit from CELL_DCH to CELL_FACH. As the UE cannot detect the specified cell~~as the transition occurs from CELL_DCH to CELL_FACH~~, ~~and then~~ the UE shall initiate the cell update procedure ~~in cell 2~~. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits ~~UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmit~~a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	~~The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.1.9.~~
2			~~BCCH~~Void	~~The SS starts to broadcast BCCH on the primary CCPCH in cell 2.~~
3	←		RADIO BEARER SETUP	Assigned the transition from CELL_DCH to CELL_FACH
4	→		CELL UPDATE	The value "cell reselection" set in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	~~This message include IE "new U-RNTI" and IE "new C-RNTI"". In the CELL_FACH state~~
6	~~→~~		~~UTRAN MOBILITY INFORMATION CONFIRM~~Void	
7	→		RADIO BEARER SETUP COMPLETE	

Specific Message Contents

RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL_FACH from CELL_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
~~U-RNTI~~ ~~- SRNC Identity~~ ~~- S-RNTI~~ Cell Update Cause	 ~~Assigned previously in cell 1~~ ~~Assigned previously in cell 1~~ "cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A. ~~with the following exceptions:~~

~~Information Element~~	~~Value/remark~~
~~U-RNTI~~ ~~New U-RNTI~~ ~~- SRNC Identity~~ ~~- S-RNTI~~ ~~New C-RNTI~~	~~Same as CELL UPDATE message in step 4~~ ~~'0000 0000 0000 0001'~~ ~~Different from previous S-RNTI~~ ~~Different from previous C-RNTI~~

8.2.1.9.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

~~After step 5 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.~~

After step 6 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

~~After step 7 the UE communicate with the SS on the DCCH and DTCH, using the common physical channel.~~

8.2.1.10 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Success

8.2.1.10.1 Definition

8.2.1.10.2 Conformance requirement

The UE shall correctly set up a radio bearer according to a RADIO BEARER SETUP message and responds with a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC~~communicate with the UTRAN for its implementation~~.

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.10.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message ~~received from the SS~~.

8.2.1.10.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_FACH state, after SS prompts the test operator to initiate a packet-switched data call. The SS transmits a RADIO BEARER SETUP message to the UE ~~after it sets up L1 including the start of tx/rx~~. After the UE receives this message, it configures them and establishes the required radio bearers. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. ~~Then the UE and the SS enters the communicating state.~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2	→		RADIO BEARER SETUP COMPLETE	
~~3~~				~~To confirm the communication~~

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical the message sub-type indicated by "Packet to CELL_DCH from CELL_FACH in PS" in ~~annex~~ Annex A.

8.2.1.10.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC. ~~After step 2 the UE shall communicate with the SS using the radio bearer indicated in RADIO BEARER SETUP message. Particularly, SS shall be able to receive packet data using a terminal equipment (TE) attached to the UE.~~

8.2.1.11 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Unsupported configuration)

8.2.1.11.1 Definition

8.2.1.11.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER SETUP message which includes an unsupported configuration and then transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, which sets value "configuration unsupported" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.11.3 Test purpose

To confirm that the UE keeps its configuration and transmits a RADIO BEARER SETUP FAILURE message in case of it receiving a RADIO BEARER SETUP message, which includes parameters of an unsupported configuration.

8.2.1.11.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: ~~CS~~PS-DCCH_FACH (state 6~~-6~~8) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_FACH state. The SS transmits a RADIO BEARER SETUP message with a stated frequency that cannot be supported by the UE. After the UE receives this message, it shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC setting value "configuration unsupported" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	This message includes an unsupported configuration for the UE.
2	→		RADIO BEARER SETUP FAILURE	The UE shall transmit this message using RLC-AM mode and do not change the current configuration.

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is indicated as " Packet to CELL_DCH from CELL_FACH in PS ~~Speech in CS" or "Non speech in CS~~" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info - UARFCN uplink (Nu) - UARFCN downlink (Nd)	 0 ~~Not Present~~950

RADIO BEARER SETUP FAILURE

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type Failure cause ~~Other information element~~	 Configuration unsupported ~~Not checked~~

8.2.1.11.5 Test requirement

After step 1 the UE shall ~~keep its configuration and~~ transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause".

8.2.1.12 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Physical channel Failure and successful reversion to old configuration)

8.2.1.12.1 Definition

8.2.1.12.2 Conformance requirement

The UE shall attempt to revert to the old configuration when the UE fails to configure the new radio bearer ~~by the~~before T312 ~~expiry~~expires and detects the same serving cell only. It shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC containing value "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.12.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message when the UE fails to configure the new radio bearer ~~when~~ after it detects physical channel failure, followed by the T312 expiry.

8.2.1.12.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_FACH state. The SS transmits a RADIO BEARER SETUP message to the UE and keeps its old physical channel configuration~~does not configure the new radio bearer~~. After T312 expiry, the UE shall perform cell reselection procedure and detect the same serving cell only. Then the UE shall ~~revert to the old configuration and~~ transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. The content of the message shall indicate "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	The SS keep its old configuration.~~The SS does not configure a new radio bearer.~~
2	→		RADIO BEARER SETUP FAILURE	The UE does not configure a new radio bearer ~~but~~ and reverts to the old configuration.
~~3~~	→		~~RADIO BEARER SETUP FAILURE~~	

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical the message sub-type indicated by "Packet to CELL_DCH from CELL_FACH in PS" in ~~annex~~ Annex A.

RADIO BEARER SETUP FAILURE

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure
~~Other information element~~	~~Not checked~~

8.2.1.12.5 Test requirement

After step ~~2~~ 1 the UE shall ~~revert to the old configuration and~~ transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

8.2.1.13 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Physical channel Failure and reversion failure)

8.2.1.13.1 Definition

8.2.1.13.2 Conformance requirement

The UE shall perform a cell update procedure when the UE selects another cell after the detection of physical channel failure in the radio bearer establishment procedure. After the UE completes cell update procedure, the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure"~~value to~~ in IE "failure cause"~~ to "physical channel failure"~~.

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.13.3 Test purpose

To confirm that the UE transmit a RADIO BEARER SETUP FAILURE message after it completes a cell update for the physical channel failure in the radio bearer establishment procedure~~procedure~~.

8.2.1.13.4 Method of test

Initial Condition

System Simulator: 2 cells ~~-~~ Cell 1 and 2 ~~is~~are active~~, Cell 2 is inactive~~.

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108 in cell 1.

Test Procedure

Table 8.2.1.13

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH ~~RSCP~~Ec	dBm	~~-73~~60	~~-79~~75	~~switched off~~-75	~~-73~~60

Table 8.2.1.13 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings ~~from~~ between columns "T0" ~~to~~ and "T1", whenever the description in multi-cell condition specifies reverse of the transmission power settings for cell 1 and cell 2.

The UE is in ~~the~~ CELL_FACH state in cell 1. The SS transmits a RADIO BEARER SETUP message to the UE. After transmitting the RADIO BEARER SETUP message, the SS shall not configure its DL dedicated physical channel in accordance with the setting in the message and release its current configuration~~configure L1 in accordance to the settings in the message~~. At the same time, the SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.1.13~~ and begins to broadcast the BCCH on the primary CCPCH in a cell 2~~. The UE recognize that it cannot synchronize with the SS on ~~configure~~ the new radio bearer~~ and wants to revert to the old configuration~~. The UE performs cell re-selection and transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" which is set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE transmits a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value "-physical channel failure" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2				The SS does not configure the new radio bearer in accordance with the settings in the message and applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.1.13.
3		~~←~~	~~BCCH~~Void	~~The SS starts to transmit the BCCH on the primary CCPCH in cell 2.~~
4				The UE select the cell 2.
5		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
6		←	CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
7		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	RADIO BEARER SETUP FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is identical to the message sub-type "Packet to CELL_DCH from CELL_FACH in PS" found in ~~annex~~ Annex A.

CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
~~U-RNTI~~	
~~- SRNC Identity~~	~~Assigned previously in cell 1~~
~~- S-RNTI~~	~~Assigned previously in cell 1~~
Cell Update Cause	"cell reselection"

CELL UPDATE CONFIRM (Step ~~7~~6)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM" message~~"~~ as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

RADIO BEARER SETUP FAILURE (Step 8)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	"physical channel failure"
~~Other information element~~	~~Not checked~~

8.2.1.13.5 Test requirement

After step 4 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 6 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7 the UE shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to " physical channel failure".

8.2.1.14 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.1.14.1 Definition

8.2.1.14.2 Conformance requirement

If the UE receives a RADIO BEARER SETUP message during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER SETUP message, it shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC.

~~If the UE receives a RADIO BEARER SETUP message whilst reconfiguring due to a radio bearer message other than RADIO BEARER SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received.~~

Reference

3GPP TS 25.331 clause 8.2.1, clause 8.6.3.11.

8.2.1.14.3 Test purpose

To confirm that if the UE receives a RADIO BEARER SETUP message ~~whilst~~ during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received and complete the reconfiguration procedure according to the previously received message.

8.2.1.14.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER SETUP message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the RADIO BEARER SETUP message, the UE shall keep ~~the~~ its current configuration as if it had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS ~~receives~~ acknowledges the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters upon the specified activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Including IE "Activation Time ~~Uplink DPCH info~~"
2	←		RADIO BEARER SETUP	The SS send this message before the expiry of activation time specified in the message of step 1.
3	→		RADIO BEAER SETUP FAILURE	The UE does not change the configuration because of ~~receiving~~ the RADIO BEARER SETUP message, and transmit this message on its uplink DCCH using the same RLC-AM mode radio bearer before step 1.
4	→		RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case are identical as "Packet to CELL_DCH from CELL_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8]
Uplink DPCH Info - Scrambling code number	 1

RADIO BEARER SETUP (for Step 2)

For this message, use the message sub-type entitled "Packet to CELL_DCH from CELL_FACH in PS" in the default message content. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	Not present
Uplink DPCH Info - Scrambling code number	 2

RADIO BEARER SETUP FAILURE

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	
Failure cause	Incompatible simultaneous reconfiguration
~~Other information element~~	~~Not checked~~

8.2.1.14.5 Test requirement

~~After step 1 The SS transmits a RADIO BEARER SETUP message before the expiry of the activation time specified in the message of step 1.~~

After step 2 the UE shall ~~keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall~~ transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall configure the new configuration on the activation time and transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

~~After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.~~

8.2.1.15 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.1.15.1 Definition

8.2.1.15.2 Conformance requirement

The UE shall keep its old configuration when the UE receives an invalid RADIO BEARER SETUP message, which does not includes ~~undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" having criticality defined as "Reject"~~any IEs except IE “Message Type”. It shall transmit a RADIO BEARER SETUP FAILURE message which set value "protocol error" in IE "failure cause" and also value "ASN.1 violation or encoding error~~Information element value not comprehended~~" in IE " Protocol error cause". The UE shall keep ~~existing~~ the old configuration ~~before~~ upon reception of a RADIO BEARER SETUP message ~~when the RADIO BEARER SETUP message~~, which includes some IEs set to give an invalid ~~value~~configuration, and then the UE shall transmit a RADIO BEARER SETUP FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.15.3 Test purpose

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives an invalid RADIO BEARER SETUP message~~, with an undefined value in the mandatory IE "UTRAN DRX~~

~~cycle length coefficient" and having criticality defined as "Reject"~~which does not include any IEs except IE “Message Type”.

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER SETUP message including some IEs set to give an invalid ~~value~~configuration.

8.2.1.15.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in CELL_FACH state. The SS transmits an invalid RADIO BEARER SETUP message to the UE which does not include~~s an undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" with criticality defined as "Reject"~~all IEs except IE “Message Type”. The UE keeps the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. This message shall specify "protocol error" in IE "failure cause" and also set the value " ASN.1 violation or encoding error ~~Information element value not comprehended~~" in IE "Protocol error cause". The UE keeps ~~initial~~ current configuration ~~when~~ after SS transmits RADIO BEARER SETUP message including some IEs set to give an invalid ~~value~~configuration. Then UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	See specific message content.
2	→		RADIO BEARER SETUP FAILURE	The UE does not change the configuration.
3	←		RADIO BEARER SETUP	This message includes IE set to give an invalid ~~value~~conifguration.
4	→		RADIO BEARER SETUP FAILURE	The UE does not change the configuration.
~~5~~	→		~~RADIO BEARER SETUP FAILURE~~	~~The IE "failure cause" shall be set to "invalid configuration~~

Specific Message Contents

RADIO BEARER SETUP (Step 1)

~~The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" as found in Annex with the following exceptions:~~

Information Element	Value/remark
~~UTRAN DRX cycle length coefficient~~All IEs	~~Out of range value~~Not Present

RADIO BEARER SETUP FAILURE (Step 2)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
~~Message Type~~	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	ASN.1 violation or encoding error~~Information element value not comprehended~~
~~Other information element~~	~~Not checked~~

RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024
~~Added or Reconfigured UL TrCH information~~	
~~- Uplink transport channel type~~	~~DCH~~
~~- UL Transport channel identity~~	~~1~~
~~- TFS~~	
~~- Dynamic Transport format information~~	~~(This IE is repeated for TFI number)~~
~~- RLC size~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~
~~- CHOICE Logical Channel list~~	~~Explicit List~~
~~- RB identity~~	~~2~~
~~- LogicalChannel~~	~~Reference to TS34.108 clause 6.10 Parameter Set~~

RADIO BEARER SETUP FAILURE (Step ~~5~~4)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
~~Message Type~~	
Failure cause	Invalid configuration
~~Other information element~~	~~Not checked~~

8.2.1.15.5 Test requirement

After step 1 the UE shall ~~keep its old configuration and~~ transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. The message shall indicate the reason of failure as "protocol error" in IE "failure cause" and set the value " ASN.1 violation or encoding error ~~Information element value not comprehended~~" in IE "Protocol error cause".

~~After step 3 the UE shall keep its old configuration~~

After step ~~4~~ 3 the UE shall transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value of IE "failure cause" to "invalid configuration".

8.2.1.16 Radio Bearer Establishment for transition from CELL_FACH to CELL_FACH: Success

8.2.1.16.1 Definition

8.2.1.16.2 Conformance requirement

The UE shall correctly set up a radio access bearer according to a RADIO BEARER SETUP message and responds with a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC~~communicate with the UTRAN for its implementation~~.

Reference

3GPP TS 25.331 clause 8.2.1.

8.2.1.16.3 Test purpose

To confirm that the UE establishes a new radio access bearer according to a RADIO BEARER SETUP message ~~received from the SS~~.

8.2.1.16.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_FACH state, after the test operator is being prompted to make an outgoing packet-switched call. The SS transmits a RADIO BEARER SETUP message to the UE ~~after it sets up L1 including the start of tx/rx~~. After the UE receives this message, it configures them and establishes a new radio access bearer. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC. ~~Then the UE and the SS enters the communicating state.~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2	→		RADIO BEARER SETUP COMPLETE	The UE select PRACH and S-CCPCH using SIB5 or SIB6.
~~3~~	→		~~RADIO BEARER SETUP COMPLETE~~	
~~4~~				~~To confirm the proper establishment of the new radio bearer by checking the packet data exchanged between the SS and a TE attached to the UE.~~

Specific Message Contents

RADIO BEARER SETUP

For this message, use the message sub-type entitled "Packet to CELL_FACH from CELL_FACH in PS" in ~~annex~~ Annex A.

8.2.1.16.5 Test requirement

After step 1, the UE shall transmit a RADIO BEARER SETUP COMPLETE message~~3 the UE shall communicate with the SS using the new radio bearer , this can be confirmed by the exchange of packet data between a terminal equipment (TE) attached to the UE and the SS~~.

8.2.1.17 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: success (Subsequently received)

8.2.1.17.1 Definition

8.2.1.17.2 Conformance requirement

If the UE receives a RADIO BEARER SETUP message before the UE completes ~~configures~~ the configuration of the radio bearers according to the previous RADIO BEARER SETUP message, the UE shall ignore the new RADIO BEARER SETUP message and configure according to the previous RADIO BEARER SETUP message. Finally, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.1, clause 8.6.3.11.

8.2.1.17.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER SETUP message before the UE ~~configures~~ completes the configuration of the radio bearer according to a previous RADIO BEARER SETUP message, it ignores the new RADIO BEARER SETUP message and configures according to the previous RADIO BEARER SETUP message received.

8.2.1.17.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH_DCH (state 6-5) or PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in ~~the~~ CELL_DCH state. SS transmits a RADIO BEARER SETUP message to the UE before the UE ~~configures~~ completes the configuration of the radio bearer according to the RADIO BEARER SETUP message prior to this new message. The UE ignores the new RADIO BEARER SETUP message and configures according to the former RADIO BEARER SETUP message. On completion of radio bearer configuration, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	The "Secondary scrambling code is set to "1".~~Including IE "Uplink DPCH info"~~
~~•a~~				~~The SS set its Downlink DPCH scrambling code to "1".~~
2	←		RADIO BEARER SETUP	SS send this message before the expiry of activation time specified in RADIO BEARER SETUP message of step 1. The IE "Secondary scrambling code" is set to "2".
3	→		RADIO BEARER SETUP COMPLETE	The UE ignores the RADIO BEARER SETUP message in step 2 and ~~confirms~~ completes configuration according to the RADIO BEARER SETUP message in step 1.

Specific Message Contents

RADIO BEARER SETUP (Step 1)

For RADIO BEARER SETUP in step 1, use the message sub-type indicated as ""Non speech in CS ~~The other of speech in CS~~" found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with the exception of the following Information Elements:

~~RADIO BEARER SETUP (Step 1)~~

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256
- Uplink DPCH Info - Secondary scrambling code	 1

RADIO BEARER SETUP (Step 2)

For RADIO BEARER SETUP in step 2, use the message sub-type indicated as ""Non speech in CS ~~The other of speech in CS~~" found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with the exception of the following:

Information Element	Value/remark
Activation Time - Uplink DPCH Info~~DL channelisation code~~ - Secondary scrambling code	Not Present 2

8.2.1.17.5 Test requirement

After step 2~~3~~ the UE shall ~~communicate with the SS on the radio bearer specified in the~~transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC~~in step 1~~.

8.2.1.18 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Success (Subsequently received)

8.2.1.18.1 Definition

8.2.1.18.2 Conformance requirement

If the UE receives a RADIO BEARER SETUP message before the UE completes the configuration of ~~configures~~ the radio bearers according to the previous RADIO BEARER SETUP message, the UE shall ignore the new RADIO BEARER SETUP message and configure according to the previous RADIO BEARER SETUP message. Finally, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.1, clause 8.6.3.11.

8.2.1.18.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER SETUP message before the UE completes the configuration of ~~configures~~ the radio bearer according to a previous RADIO BEARER SETUP message, it ignores the new RADIO BEARER SETUP message and configures according to the previous RADIO BEARER SETUP message received.

8.2.1.18.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_FACH state. The SS transmits a RADIO BEARER SETUP message, requesting the UE to setup radio bearers using DPCH physical channels. ~~The activation time of this event is specified to be 255 frames from the SS's current CFN. However,~~ SS ~~sends~~ transmits another RADIO BEARER SETUP message before ~~255 frames~~the activation time specified in the first message has lapsed. The UE ignores the new RADIO BEARER SETUP message and configures the radio bearers according to the former RADIO BEARER SETUP message. On completion of radio bearer configuration, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	The "Secondary scrambling code is set to "1"~~Including IE "Uplink DPCH info"~~
~~1a~~				~~The SS set its Downlink DPCH scrambling code to "1".~~
2		←	RADIO BEARER SETUP	SS send this message before the expiry of activation time specified in RADIO BEARER SETUP message of step 1. The IE "Secondary scrambling code" is set to "2".
3		→	RADIO BEARER SETUP COMPLETE	The UE ignores the RADIO BEARER SETUP message in step 2 and confirms configuration according to the RADIO BEARER SETUP message in step 1.

Specific Message Contents

RADIO BEARER SETUP (Step 1)

For this message, use the message sub-type entitled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256
- Uplink DPCH Info - Secondary scrambling code	 1

RADIO BEARER SETUP (for Step 2)

For this message, use the message sub-type entitled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	Not Present
- Uplink DPCH Info~~DL channelisation code~~ - Secondary scrambling code	 2

8.2.1.18.5 Test requirement

After step 2 the UE shall ~~keep its configuration and~~ transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC specified in step 1.

After step 3 the UE shall communicate with the SS on the radio bearer specified in the RADIO BEARER SETUP message in step 1.

8.2.1.19 Radio Bearer Establishment from CELL_DCH to CELL_PCH: Success

8.2.1.19.1 Definition

8.2.1.19.2 Conformance requirement

The UE shall configure radio bearers so as to ~~and transition~~transit from CELL_DCH state to CELL_PCH state according to the received RADIO BEARER SETUP message and responds with a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.~~2~~1.

8.2.1.19.3 Test purpose

To conform that the UE transmits a RADIO BEARER SETUP COMPLETE message and enters CELL_PCH state after it received a RADIO BEARER SETUP message for the transition from CELL_DCH to CELL_PCH from SS ~~and configured new radio bearers~~.

8.2.1.19.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_DCH state. The SS transmits a RADIO BEARER SETUP message. The UE transmits RADIO BEARER SETUP COMPLETE message ~~to the UE~~ using AM RLC and enters ~~into~~ CELL_PCH state. ~~The SS transmits a PAGING TYPE 1 message, causing the UE to enter CELL_FACH state and the UE shall transmit CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "paging response".~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2		→	RADIO BEARER SETUP COMPLETE	
3				The UE is in CELL_PCH state~~Configuration of Radio Bearer after state transition~~.
~~4~~		←	~~PAGING TYPE 1~~	~~The SS transmits this message included a matched identity.~~
~~5~~		→	~~CELL UPDATE~~	~~The UE is in CELL_FACH state.~~

Specific Message Contents

RADIO BEARER SETUP (Step 1)

Use the same message sub-type titled "Packet to CELL_FACH from CELL_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL PCH
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	 100

~~PAGING TYPE 1 (Step 4)~~

~~Use the same message sub-type titled "TM (SMS in PS)" in Annex A with following exceptions:~~

~~Information Element~~	~~Value/remark~~
~~Paging record list~~ ~~Paging record~~ ~~- CHOICE Used paging identity~~ ~~- U-RNTI~~ ~~- SRNC Identity~~ ~~- S-RNTI~~	 ~~UTRAN identity~~ ~~Previously assigned SRNC identity in Initial Condition~~ ~~Previously assigned S-RNTI in Initial Condition~~

8.2.1.19.5 Test requirement

After step 1, the UE shall transmit~~s~~ a RADIO BEARER SETUP COMPLETE message ~~to the UE~~ on uplink DCCH using AM RLC.

After step ~~4~~2, the UE shall ~~transmit CELL UPDATE message on the CCCH~~enter CELL_PCH state.

8.2.1.20 Radio Bearer Establishment from CELL_DCH to URA_PCH: Success

8.2.1.20.1 Definition

8.2.1.20.2 Conformance requirement

The UE shall configure radio bearers ~~and transition~~so as to transit from CELL_DCH state to URA_PCH state according to the receive~~ding~~ RADIO BEARER SETUP message and responds with a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.~~2~~1.

8.2.1.20.3 Test purpose

To ~~conform~~ confirm that the UE transmits a RADIO BEARER SETUP COMPLETE message and enters URA_PCH state after it received a RADIO BEARER SETUP message for the transition from CELL_DCH to URA_PCH from SS ~~and configured the new radio bearers~~.

8.2.1.20.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in ~~the~~ CELL_DCH state. The SS transmits a RADIO BEARER SETUP message. The UE transmits a RADIO BEARER SETUP COMPLETE message ~~to the UE~~ using AM RLC and enters URA_PCH state. ~~The SS transmits a PAGING TYPE 1 message, causing the UE to enter CELL_FACH state and the UE shall transmit CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "paging response".~~

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2		→	RADIO BEARER SETUP COMPLETE	
3				The UE is in URA_PCH state~~Configuration of Radio Bearer after state transition~~.
4		←	~~PAGING TYPE 1~~	~~The SS transmits this message included a matched identity.~~
~~5~~		→	~~CELL UPDATE~~	~~The UE is in CELL_FACH state.~~

Specific Message Contents

RADIO BEARER SETUP (Step 1)

Use the same message sub-type titled "Packet to CELL_FACH from CELL_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA PCH
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	 100

~~PAGING TYPE 1 (Step 4)~~

~~Use the same message sub-type titled "TM (SMS in PS)" in Annex A with following exceptions:~~

~~Information Element~~	~~Value/remark~~
~~Paging record list~~ ~~Paging record~~ ~~- CHOICE Used paging identity~~ ~~- U-RNTI~~ ~~- SRNC Identity~~ ~~- S-RNTI~~	 ~~UTRAN identity~~ ~~Previously assigned SRNC identity in Initial Condition~~ ~~Previously assigned S-RNTI in Initial Condition~~

8.2.1.20.5 Test requirement

After step 1, the UE shall transmit~~s~~ a RADIO BEARER SETUP COMPLETE message ~~to the UE~~ on uplink DCCH using AM RLC.

After step ~~3~~2, the UE shall ~~transmit CELL UPDATE message on the CCCH~~enter URA_PCH state.

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CR-Form

CHANGE REQUEST

⌘ **34.123-1** **CR** 127 ⌘ rev ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	RRC Connection Management Procedure Tests for the TDD options.
Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	26.11.01
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	Introduces RRC Connection Management Procedure test parameters for the TDD options. Most of the tests described in TS34.123 section 8.1 are applicable, unchanged, to both FDD and TDD, however, in a small number of cases TDD specific information is added. Where th contents of test messages are listed, it is necessary to introduce TDD versions of these messages and where CPICH RSCP levels are specified P-CCPCH RSCP signal levels are introduced for the TDD case.
Summary of change:	⌘	TDD specific parameters are introduced to those tests where TDD specific parameters are required. 8.1.1.1 TDD specific reference added, 8.1.2.2 SIB 5 contents for TDD for 3.84 Mcps and 1.28 Mcps options are added, 8.1.2.4 RRC Connection Reject (step 2) for TDD (3.84 Mcps and 1.28 Mcps options) is added, 8.1.5.3 Cell Update Confirm (step 6) for TDD (3.84 Mcps and 1.28 Mcps options) is added
Consequences if not approved:	⌘	Test procedures will not be defined for TDD mode (both options).

Clauses affected:	⌘	8.1.1.1, 8.1.2.2, 8.1.2.4, 8.1.5.3
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications
	⌘	TS 34.123-2
Other comments:	⌘	This CR affects Release 99 and Release 4

8 Radio Resource Control RRC

8.1 RRC Connection Management Procedure

8.1.1 Paging

8.1.1.1 Paging for Connection in idle mode

8.1.1.1.1 Definition

8.1.1.1.2 Conformance requirement

In idle mode, UE monitors the paging occasions determined using parameters from SYSTEM INFORMATION BLOCK messages. When the UE receives a PAGING TYPE 1 message transmitted on PCCH during one of its assigned paging occasions, it shall attempt to establish an RRC connection.

Reference

3GPP TS 25.331 clause 8.1.2, 3GPP TS 25.211 clause 5.3.3.7 (FDD), 3GPP TS25.221 (TDD), 3GPP TS 25.304 clause 8.

8.1.1.1.3 Test purpose

To confirm that the UE establishes an RRC connection after it receives a PAGING TYPE 1 message which includes IE "Paging Record"(UE identity) set to the IMSI of the UE.

8.1.1.1.4 Method of test

Initial Condition

System Simulator: 1 cell
UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity (set to IMSI), depending on the CN domain(s) supported by the UE.

Test Procedure

SS transmits SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message, which includes an unmatched CN UE identity for the UE in the idle state. The UE shall not change its state. The SS transmits a PAGING TYPE 1 message, which includes a matched CN UE identity for the UE in the idle state. During transmission of PAGING TYPE 1 messages, SS selects the correct paging indicator on the PICH in order to allow the UE to respond to paging. Then the UE transmits an RRC CONNECTION REQUEST to the SS, the SS transmits an RRC CONNECTION SETUP to the UE. When the UE receives this message, the UE establishes an RRC connection and transmits an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		SYSTEM INFORMATION BLOCK TYPE 13 or SYSTEM INFORMATION BLOCK TYPE 1	Transmit these messages on the BCCH, in addition to the normal BCCH transmissions. See specific message contents.
2	←		PAGING TYPE 1	The SS transmits the message, which includes an unmatched identity (incorrect IMSI), and the UE does not change its state.
3	←		PAGING TYPE 1	The SS transmits the message, which includes a matched identity (test-SIM IMSI).
4	→		RRC CONNECTION REQUEST	
5	←		RRC CONNECTION SETUP	SS assigns DPCH resources to allow UE to establish an RRC connection.
6	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

SYSTEM INFORMATION BLOCK TYPE 1 (Step 1) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
CN common GSM-MAP NAS system information	Location Area Information (LAI)
CN domain system information list	
- CN domain system information	
- CN domain identity	Supported Domain (PS Domain or CS Domain)
- CHOICE CN Type	Supported CN type
- CN domain specific NAS system information	00 00(CS) or 1E 01(PS)
- CN domain specific DRX cycle length coefficient	7
UE Timers and constants in idle mode	
- T300	4000 milliseconds
- N300	3
- T312	10 seconds
- N312	200

SYSTEM INFORMATION TYPE 13 (Step 1) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
CN domain system information list	Only 1 entry
CN domain system information	
- CN domain identity	Supported Domain (PS Domain or CS Domain)
- CHOICE CN Type	Supported CN type
- CN domain specific NAS system information	Default
- CN domain specific DRX cycle length coefficient	6
UE Timers and constants in idle mode	
- T300	6000 milliseconds
- N300	3
- T312	10 sec
- N312	200

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list Paging record CHOICE Used paging identity - Paging cause - CN domain identity - CHOICE UE Identity - IMSI	Only 1 entry CN identity Terminating Call with one of the supported services Supported Domain (PS Domain or CS Domain) IMSI Set to an arbitrary octet string of length 7 bytes which is different from the IMSI value stored in the TEST USIM card.

PAGING TYPE 1 (Step 3)

Information Element	Value/remark
Paging record list Paging record CHOICE Used paging identity - Paging cause - CN domain identity - CHOICE UE Identity - IMSI	Only 1 entry CN identity Terminating Call with one of the supported services Supported Domain (PS Domain or CS Domain) IMSI Set to the same octet string as in the IMSI stored in the TEST USIM card

RRC CONNECTION REQUEST (Step 4)

Information Element	**Value/remark**
Initial UE identity Establishment Cause Protocol Error Indicator Measured results on RACH	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI Check to see if it is set to the same value as "Paging Cause" IE in the PAGING TYPE 1 message transmitted on step 3. Check to see if it is set to FALSE Not checked.

8.1.1.1.5 Test requirement

After step 2 the UE shall not transmit on the uplink CCCH in order to establish a RRC connection.

After step 5 the UE shall have an RRC connection based on dedicated physical channel resources and transmit an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

8.1.1.2 Paging for Connection in connected mode (CELL_PCH)

8.1.1.2.1 Definition

8.1.1.2.2 Conformance requirement

In CELL_PCH state, a UE can respond to a paging request from UTRAN. In this case, the UTRAN has requested to establish a connection with the UE. The UE shall then attempt to perform a cell update procedure and move to CELL_FACH state in order to respond to the paging using uplink CCCH.

Reference

3GPP TS 25.331 clause 8.1.2.

8.1.1.2.3 Test purpose

To confirm that the UE enters the CELL_FACH state after it receives a PAGING TYPE 1 message which indicates that the paging has originated from UTRAN. To verify that the UE performs cell update procedure after entering the CELL_FACH state.

8.1.1.2.4 Method of test

Initial Condition

System Simulator: 1 cell
UE: CELL_PCH state (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE with a valid U-RNTI already assigned by the SS.

Test Procedure

SS transmits SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message, which includes an unmatched U-RNTI in CELL_PCH state. The UE does not change its state. Then SS transmits a PAGING TYPE 1 message with a matched identifier but originates from the CN instead of UTRAN. The UE shall not change state after receiving this message. The SS transmits a PAGING TYPE 1 message, which includes a matched U-RNTI in the connected state. Then the UE enters the CELL_FACH state and performs the cell updating procedure.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SYSTEM INFORMATION BLOCK TYPE 13 or SYSTEM INFORMATION BLOCK TYPE 1	Transmit these messages on the BCCH, in addition to the normal BCCH transmissions. See specific message contents
2		←	PAGING TYPE 1	The SS transmits a message including an unmatched identifier. UE shall not respond to the paging.
3		←	PAGING TYPE 1	The SS transmits a message includes a matched identifier but with the originator being the CN, UE shall not respond to the paging.
4		←	PAGING TYPE 1	The SS transmits the message with the UTRAN being the originator and including the UE's assigned U-RNTI
5		→	CELL UPDATE	The UE enters the CELL_FACH state. UE performs cell updating procedure. The CELL UPDATE message shall contain the value "Cell Update Cause" set to "paging response".
6		←	CELL UPDATE CONFIRM	Use the default message specified in Annex A.

Specific Message Contents

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	Only 1 entry UTRAN identity Set to an arbitrary 16-bit string which is different from the SRNC identity assigned. Set to an arbitrary 20-bit string which is different from the S-RNTI assigned.

PAGING TYPE 1 (Step 3)

Same as the PAGING TYPE 1 message as in Clause 8.1.1.1.4, with the exception that the "BCCH modification info" IE shall be omitted in the message.

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	Only 1 entry UTRAN identity Set to the same SRNC identity as previously assigned. Set to the same S-RNTI as previously assigned.

SYSTEM INFORMATION BLOCK TYPE 13

Use the same SYSTEM INFORMATION BLOCK TYPE 13 message as specified in clause 8.1.1.1.4.

SYSTEM INFORMATION BLOCK TYPE 1

Use the same SYSTEM INFORMATION BLOCK TYPE 1 message as specified in clause 8.1.1.1.4.

8.1.1.2.5 Test requirement

After step 2 the UE shall not respond to the PAGING TYPE 1 message sent in step 2.

After step 3 the UE shall not respond to the PAGING TYPE 1 message sent in step 2.

After step 4 the UE shall enter the CELL FACH state and send a CELL UPDATE message with "Cell Update Cause" IE set to "paging response".

8.1.1.3 Paging for Connection in connected mode(URA_PCH)

8.1.1.3.1 Definition

8.1.1.3.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 1 message from the network to selected UEs in URA_PCH state using the paging control channel (PCCH). The UE listens to it and then enters the CELL_FACH state.

Reference

3GPP TS 25.331 clause 8.1.2.

8.1.1.3.3 Test purpose

To confirm that the UE enters the CELL_FACH state after it receives a PAGING TYPE 1 message which includes IE "Paging Record"(U-RNTI) for the UE and which is set to "UTRAN originator" in IE "paging originator".

8.1.1.3.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: URA_PCH state (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE with a valid U-RNTI assigned by the SS.

Test Procedure

The SS transmits a PAGING TYPE 1 message, which includes an unmatched U-RNTI in URA_PCH state. The UE does not change its current state. The SS transmits a PAGING TYPE 1 message which includes a matched U-RNTI in the connected state. Then the UE listens to it and enters the CELL_FACH state to transmit a CELL UPDATE message using uplink CCCH in respond to the paging.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PAGING TYPE 1	The SS transmits the message that includes an unmatched identifier, then the UE does not change its state.
2	←		PAGING TYPE 1	The SS transmits the message that includes a matched identifier.
3	→		CELL UPDATE	The UE enters the CELL_FACH state.
4	←		CELL UPDATE CONFIRM	Use the default message specified in Annex A.

Specific Message Contents

PAGING TYPE 1 (Step 1)

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	Only 1 entry UTRAN identity Set to an unused SRNC identity which is different from the SRNC identity assigned. Set to an arbitrary 20-bit string which is different from the S-RNTI assigned.

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Set to the previously assigned SRNC identity
- S-RNTI	Set to previously assigned S-RNTI

8.1.1.3.5 Test requirement

After step 1 the UE shall not respond to the paging.

After step 2 the UE shall enter the CELL FACH state, and transmit CELL UPDATE message to initiate the cell updating procedure with the paging cause set to "paging response".

8.1.1.4 Paging for Notification in idle mode

8.1.1.4.1 Definition

8.1.1.4.2 Conformance requirement

When a system information block on the BCCH is modified, the PAGING TYPE 1 message can be sent on the PCCH to inform the UE about the changes, which are currently taking place in the idle mode. The PAGING TYPE 1 message includes the IE "BCCH Modification Information". Upon receiving this notification from the UTRAN, the UE shall read the relevant MIB and/or SIB(s) subsequently during idle mode.

Reference

3GPP TS 25.331 clause 8.1.1.2.

8.1.1.4.3 Test purpose

To confirm that the UE checks the new value tag of the master information block and reads the updated SYSTEM INFORMATION BLOCK messages after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

8.1.1.4.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the idle state before SS starts to change the SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message on the paging occasions assigned to the UE. The message shall include the IE "BCCH Modification Information" indicating the time when the first modified master information block is available. Before the starting time, SS continuously broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on the BCCH mapped to BCH transport channel. SS maintains this status until the SFN which corresponds to the starting time is reached. Then it transmits the new master information block followed by the new SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages. In the new SIB TYPE 1 or 13 messages, the IE "DRX Cycle Length Coefficient" is altered when compared to the original SIB TYPE 1 or 13 messages. At the next paging occasion, SS transmits a new PAGING TYPE 1 message. The message addresses the UE using its IMSI and the "paging cause" IE set to a terminating call type that is supported by the UE. The UE shall react to the PAGING TYPE 1 message and then send a RRC CONNECTION REQUEST message to SS.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS transmits information on BCCH in order for UE to listen to one of the S-CCPCH physical channel, which carries PAGING TYPE 1 or 13 messages on PCCH. Relevant paging parameters are also broadcasted.
2	←		PAGING TYPE 1	SS transmits the message includes the IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
3	← ←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting. At the same time, SS starts to transmit the affected SIB TYPE 1 or TYPE 13 messages continuously. The value of IE "DRX Cycle Length Coefficient" is changed in this message. SS starts to monitor the uplink RACH after approximately 4087 frames from step 2.
4	←		PAGING TYPE 1	SS starts to transmit this message continuously on the PCCH according to the new value of "DRX Cycle Length Coefficient", at the next paging occasion immediately following step 3.
5	→		RRC CONNECTION REQUEST	UE transmits a request due to answer to the PAGING TYPE 1 received in step 4. The IE "Establishment Cause" shall be set to "Terminating Call" supported by the UE and the "Initial UE Identity" set to UE's IMSI.
6	←		RRC CONNECTION REJECT	UE shall return to idle mode after receiving this message

Specific Message Contents

SYSTEM INFORMATION BLOCK TYPE 1 (Step 1) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
CN common GSM-MAP NAS system information	
CN domain system information list	Location Area Information (LAI)
- CN domain system information	Supports both CS and PS domains
- CN domain identity	
- CHOICE CN Type	CS domain
- CN domain specific NAS system information	00 00
	7
- CN domain specific DRX cycle length coefficient	
- CN domain system information	PS domain
- CN domain identity	1E 01
- CHOICE CN Type	7
- CN domain specific NAS system information	
	4000 milliseconds
- CN domain specific DRX cycle length coefficient	7
UE Timers and constants in idle mode	10 seconds
- T300	200
- N300	Not Present
- T312	
- N312	
UE Timers and constants in connected mode	

SYSTEM INFORMATION BLOCK TYPE 13 (Step 1) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
CN domain system information list	Supports both CS and PS domains
CN domain system information	
- CN domain identity	CS
- CHOICE CN Type	ANSI-41
- CN domain specific NAS system information	
- ANSI-41 NAS System Information	
- ANSI-41 NAS Parameter	Set to an ANSI-41 user zone information
- CN domain specific DRX cycle length coefficient	12
- CN domain identity	PS
- CHOICE CN Type	ANSI-41
- CN domain specific NAS system information	
- ANSI-41 NAS System Information	
- ANSI-41 NAS Parameter	Set to an ANSI-41 user zone information
- CN domain specific DRX cycle length coefficient	12
UE Capability update requirement	Not Present

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
BCCH modification info	
MIB Value Tag	2
BCCH Modification time	4088

MASTER INFORMATION BLOCK (Step 3)

Information Element	Value/remark
MIB Value tag	2

SYSTEM INFORMATION BLOCK TYPE 1 (Step 3) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
References to other system information blocks	Not Present
CN common GSM-MAP NAS system information	Location Area Information (LAI)
CN domain system information list	Supports both CS and PS domains
- CN domain system information	
- CN domain identity	CS domain
- CHOICE CN Type	00 00
- CN domain specific NAS system information	6
- CN domain specific DRX cycle length coefficient	PS domain
- CN domain system information	1E 01
- CN domain identity	6
- CHOICE CN Type	
- CN domain specific NAS system information	4000 milliseconds
	6
- CN domain specific DRX cycle length coefficient	10 seconds
UE Timers and constants in idle mode	200
- T300	Not Present
- N300	
- T312	
- N312	
UE Timers and constants in connected mode	

SYSTEM INFORMATION BLOCK TYPE 13 (Step 3) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
References to other system information blocks	Not Present
CN domain system information list	Supports both CS and PS domains
CN domain system information	
- CN domain identity	CS domain
- CHOICE CN Type	ANSI-41
- CN domain specific NAS system information	
- ANSI-41 NAS system information	
- ANSI-41 NAS Parameter	Set to an ANSI-41 user zone information
- CN domain specific DRX cycle length coefficient	6
- CN domain identity	PS domain
- CHOICE CN Type	ANSI-41
- CN domain specific NAS system information	
- ANSI-41 NAS system information	
- ANSI-41 NAS Parameter	Set to an ANSI-41 user zone information
- CN domain specific DRX cycle length coefficient	6

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	CN identity
- Paging Cause	Terminating Call with one of the supported services
- CN Domain Identity	Supported Domain (PS Domain or CS Domain)
- CHOICE UE Identity	IMSI
- IMSI	Set to the same octet string as in the IMSI value stored in the TEST USIM card

RRC CONNECTION REJECT (Step 6)

Information Element	Value/remark
Initial UE identity	
- CHOICE UE id type	IMSI
- IMSI	Set to the same octet string as in the IMSI value stored in the TEST USIM card
Rejection cause	Unspecified
Wait time	0
Redirection info	Not Present

8.1.1.4.5 Test requirement

After step 5 the UE shall transmit RRC CONNECTION REQUEST message in response to the PAGING TYPE 1 messages sent in step 4.

8.1.1.5 Paging for Notification in connected mode (CELL_PCH)

8.1.1.5.1 Definition

8.1.1.5.2 Conformance requirement

When a system information block on the BCCH is modified, the message PAGING TYPE 1 can be sent on the PCCH to inform the UE about this change in the CELL_PCH state. This message includes the IE "BCCH Modification Information". Upon receiving this notification from the UTRAN, the UE shall read the relevant MIB and/or SIB(s) subsequently while in CELL_PCH state.

Reference

3GPP TS 25.331 clause 8.1.1.2.

8.1.1.5.3 Test purpose

To confirm that the UE enters the CELL_FACH state, checks the new value tag of the master information block, and read the SYSTEM INFORMATION messages after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

8.1.1.5.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_PCH state (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE with valid a U-RNTI assigned to it.

Test Procedure

Identical test steps 1 to 4 in Clause 8.1.1.4 are applied to this test. However, the PAGING TYPE 1 messages used in step 2 and step 4 are altered. The changes are indicated in the specific message content paragraph under this clause. At step 5, UE shall send the CELL UPDATE message indicating the "cell update cause" to be "paging response". SS then replies with a CELL UPDATE CONFIRM message to allow the UE to transit to CELL_FACH state.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS transmits information on BCCH in order for UE to listen to one of the S-CCPCH physical channel, which carries PAGING TYPE 1 or 13 messages on PCCH. Relevant paging parameters are also broadcasted.
2	←		PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
3	← ←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting. At the same time, SS starts to transmit the affected SIB TYPE 1 or TYPE 13 messages continuously. The value of IE "DRX Cycle Length Coefficient" is changed in this message. SS starts to monitor the uplink RACH after approximately 4087 SFN from step 2.
4	←		PAGING TYPE 1	SS transmits this message continuously on the PCCH according to the new value of "DRX Cycle Length Coefficient", at the next paging occasion immediately following step 3. This message shall page the UE with its U-RNTI and setting the UTRAN as the paging originator.
5	→		CELL UPDATE	The IE "Cell Update Cause" shall be set to "Paging Response" and the IE "U-RNTI" shall be similar to the UE's U-RNTI value. The "Protocol Error Indicator" IE shall be set to FALSE.
6	←		CELL UPDATE CONFIRM	UE shall transit to CELL_FACH state after receiving this message.

Specific Message Contents

SYSTEM INFORMATION BLOCK TYPE 1 or TYPE 13 (Step 1)

The content of this message is the same in the message used in step 1 specified in clause 8.1.1.4.4.

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	4088

MASTER INFORMATION BLOCK (Step 3) and

SYSTEM INFORMATION BLOCK TYPE 1 or TYPE 13 (Step 3)

The content of these messages is the same in the message used in step 3 specified in clause 8.1.1.4.4.

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	Not Present
BCCH modification info	

CELL UPDATE CONFIRM (Step 6)

Use the same message type found in annex A, with the following exception:

Information Element	Value/remark
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
- RRC State Indicator	CELL_FACH

8.1.1.5.5 Test requirement

After step 5 the UE shall transmit a CELL UPDATE message with "cell update cause" IE set to "paging response". Upon receiving CELL UPDATE CONFIRM message, the UE shall enter the CELL_FACH state.

8.1.1.6 Paging for Notification in connected mode (URA_PCH)

8.1.1.6.1 Definition

8.1.1.6.2 Conformance requirement

When a system information block on the BCCH is modified, the UTRAN can send a PAGING TYPE 1 message on the PCCH to inform UE about the changes while the UE is in the URA_PCH state. This message includes the IE "BCCH Modification Information". When receiving this message in URA_PCH state, the UE shall read the relevant MIB and/or SIB(s).

Reference

3GPP TS 25.331 clause 8.1.1.2.

8.1.1.6.3 Test purpose

To confirm that the UE enters the CELL_FACH state, checks the included new value tag of the master information block and reads the relevant SYSTEM INFORMATION block(s) after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

8.1.1.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH state (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE with a valid U-RNTI assigned.

Test Procedure

Identical test steps 1 to 4 in clause 8.1.1.4 are applied to this test. However, the PAGING TYPE 1 messages used in step 2 and step 4 are altered. The changes are indicated in the specific message content paragraph under this clause. At step 5, UE shall send the CELL UPDATE message indicating the "cell update cause" to be "paging response". SS then replies with a CELL UPDATE CONFIRM message to allow the UE to transit to CELL_FACH state.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS transmits information on BCCH in order for UE to listen to one of the S-CCPCH physical channel, which carries PAGING TYPE 1 or 13 messages on PCCH. Relevant paging parameters are also broadcasted.
2		←	PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
3		← ←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting. At the same time, SS starts to transmit the affected SIB TYPE 1 or TYPE 13 messages continuously. The value of IE "DRX Cycle Length Coefficient" is changed in this message. SS starts to monitor the uplink RACH after approximately 4087 SFN from step 2.
4		←	PAGING TYPE 1	SS transmits this message continuously on the PCCH according to the new value of "DRX Cycle Length Coefficient", at the next paging occasion immediately following step 3. This message shall page the UE with its U-RNTI and setting the UTRAN as the paging originator.
5		→	CELL UPDATE	The IE "Cell Update Cause" shall be set to "Paging Response" and the IE "U-RNTI" shall be similar to the UE's U-RNTI value. The "Protocol Error Indicator" IE shall be set to FALSE.
6		←	CELL UPDATE CONFIRM	UE shall transit to CELL_FACH state after receiving this message.

Specific Message Contents

SYSTEM INFORMATION BLOCK TYPE 1 or TYPE 13 (Step 1)

The content of this message is the same in the message used in step 1 specified in clause 8.1.1.4.4.

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	4088

MASTER INFORMATION BLOCK (Step 3) and

SYSTEM INFORMATION BLOCK TYPE 1 or TYPE 13 (Step 3)

The content of these messages is the same in the message used in step 3 specified in clause 8.1.1.4.4.

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	Not Present
BCCH modification info	

CELL UPDATE CONFIRM (Step 6)

Use the same message type found in Annex A, with the following exception:

Information Element	Value/remark
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
- RRC State Indicator	CELL_FACH

8.1.1.6.5 Test requirement

After step 2 the UE shall enter the CELL_FACH state and read the SYSTEM INFORMATION message and follow it.

8.1.1.7 Paging for Connection in connected mode (CELL_DCH)

8.1.1.7.1 Definition

8.1.1.7.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 2 message from the network to selected UEs in CELL_DCH state using the dedicated control channel (DCCH). The UE listens to it and responds to this message accordingly.

Reference

3GPP TS 25.331 clause 8.1.11.

8.1.1.7.3 Test purpose

To confirm that the UE responds this message after it receives a PAGING TYPE 2 message which includes IE "Paging Record Type Identifier" for the UE.

8.1.1.7.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE, after executing a location registration or attach procedure followed by the release of the TMSI of P-TMSI allocated.

Test Procedure

The SS transmits a PAGING TYPE 2 message which includes an unmatched Paging Record Type Identifier in CELL_DCH state. The UE shall not respond to this message. SS pages the UE again, this time with an invalid PAGING TYPE 2. UE shall respond by transmitting a RRC STATUS message on the DCCH using RLC-AM mode. Finally, SS transmits a PAGING TYPE 2 message, which includes a matched Paging Record Type Identifier. Then the UE shall responds to this message by the transmission of an upper layer message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 2	The SS transmits the message includes an unmatched identifier, then the UE does not respond.
2		←	PAGING TYPE 2	See message content.
3		→	RRC STATUS	The UE shall respond by reporting the protocol error to the SS.
4		←	PAGING TYPE 2	SS pages the UE with a matched identifier and with a valid "paging cause" IE.
5		→	UPLINK DIRECT TRANSFER	The UE shall respond to the paging message sent in step 4.

Specific Message Contents

PAGING TYPE 2 (Step 1)

Information Element	Value/remark
Paging cause CN domain identity Paging record type identifier	Terminating Call supported by the UE Domain supported by the UE Set to "TMSI" or "P-TMSI" allocated during the execution of location registration or attach procedure respectively

PAGING TYPE 2 (Step 2)

Information Element	Value/remark
All IEs	Not Present

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol error information	Checked to see if set to "ASN.1 violation or encoding error"

PAGING TYPE 2 (Step 4)

Information Element	Values/Remarks
Paging cause CN domain identity Paging record type identifier	Terminating Call supported by the UE Domain supported by the UE Set to "IMSI (GSM-MAP)" for UEs supporting GSM-MAP core network type or "IMSI (DS-41)" for UEs supporting ANSI-41 core network type.

UPLINK DIRECT TRANSFER (Step 5)

Only the message type IE for this message is checked.

8.1.1.7.5 Test requirement

After step 1 the UE shall not respond to the paging message on the DCCH.

After step 2 the UE shall respond to the paging message by transmitting RRC STATUS on the DCCH, stating the protocol error as "ASN.1 violation or encoding error".

After step 4 the UE shall respond to the paging message by transmitting an UPLINK DIRECT TRANSFER message on the uplink DCCH.

8.1.1.8 Paging for Connection in connected mode (CELL_FACH)

8.1.1.8.1 Definition

8.1.1.8.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 2 message from the network to selected UEs in CELL_FACH state using the dedicated control channel (DCCH). The UE shall listen to it and responds to this message accordingly.

Reference

3GPP TS 25.331 clause 8.1.11.

8.1.1.8.3 Test purpose

To confirm that the UE responds to a PAGING TYPE 2 message, which includes a matching value for IE "Paging Record Type Identifier".

8.1.1.8.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The SS transmits a PAGING TYPE 2 message, which includes an unmatched Paging Record Type Identifier in CELL_FACH state. The UE shall not respond to this message. The SS transmits a PAGING TYPE 2 message, which includes a matched Paging Record Type Identifier. Then the UE shall respond by transmitting an upper layer message to answer this page.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PAGING TYPE 2	The SS transmits the message includes an unmatched identifier, then the UE does not respond.
2	←		PAGING TYPE 2	The SS transmits the message includes a matched identifier.
3	→		UPLINK DIRECT TRANSFER	The UE responds by sending an upper layer message.

Specific Message Content

PAGING TYPE 2 (Step 1)

Use the same message content as in step 1 from 8.1.1.7.4.

PAGING TYPE 2 (Step 2)

Use the same message content as in step 4 from 8.1.1.7.4.

8.1.1.8.5 Test requirement

After step 1 the UE shall not respond.

After step 2 the UE shall respond to the second PAGING TYPE 2 message by transmitting an UPLINK DIRECT TRANSFER message on the uplink DCCH.

8.1.2 RRC Connection Establishment

8.1.2.1 RRC Connection Establishment in CELL_DCH state: Success

8.1.2.1.1 Definition

8.1.2.1.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message. This message shall include the IE "Initial UE identity" and is to be transmitted on the uplink CCCH.

2. After the UE receives an RRC CONNECTION SETUP message which includes the same value of the IE "initial UE identity", radio resource parameters (i.e. Signalling link type and multiplexing info) and U-RNTI, UE then configures the layer 2 and layer 1 processing so as to support the DCCH according to the radio resource parameters specified. The procedure successfully ends when the network receives an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.1.3 Test purpose

To confirm that the UE leaves the Idle Mode and correctly establishes a signalling link on the DCCH.

8.1.2.1.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE.

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE. SS then transmits an RRC CONNECTION SETUP message containing an IE "Initial UE Identity" that does not match the IE "Initial UE Identity" in the most recent RRC CONNECTION REQUEST message sent by the UE. UE receives the RRC CONNECTION SETUP message within timer T300 but discards it due to the IE "Initial UE Identity" mismatch. UE shall wait for timer T300 to time out before re-transmitting a RRC CONNECTION REQUEST message to the SS. SS again assigns the necessary radio resources and U-RNTI. SS then follows by transmitting a RRC CONNECTION SETUP message containing an IE "Initial UE Identity" that matches the IE "Initial UE Identity" in the most recent RRC CONNECTION REQUEST sent by the UE. SS then waits for the UE to transmit an RRC CONNECTION SETUP COMPLETE message on the DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	By outgoing call operation
2	←		RRC CONNECTION SETUP	This message is not addressed to the UE.
3	→		RRC CONNECTION REQUEST	UE shall re-transmit the request message again after a time out of T300 from step 1.
4	←		RRC CONNECTION SETUP	
5				The UE configures the layer 2 and layer 1.
6	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Content

RRC CONNECTION SETUP (Step 2)

Information Element	Value/remark
Initial UE Identity CHOICE UE id type IMSI	 IMSI Set to an arbitrary octet string of length 7 which different from the IMSI value stored in the TEST USIM card.

8.1.2.1.5 Test requirement

After step 2 the UE shall re-transmit the RRC CONNECTION REQUEST message again in order to continue the RRC connection establishment procedure.

After step 6 the UE shall establish an RRC connection and continue the procedure of the outgoing call on the DCCH.

8.1.2.2 RRC Connection Establishment: Success after T300 timeout

8.1.2.2.1 Definition

8.1.2.2.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode. The UE shall transmit an RRC CONNECTION REQUEST message which includes the IE "Initial UE identity". This message shall be sent on the uplink CCCH.

   When there are more than one PRACHs available, the UE shall select one PRACH randomly and transmit an RRC CONNECTION REQUEST message by use of selected PRACH.

2. In the case of a failure to establish the RRC connection at the expiry of timer T300 ,the UE retries to establish the RRC connection until V300 is greater than N300

   When the UE receives a RRC CONNECTION SETUP message, which contains a protocol error and causing the internal variable PROTOCOL_ERROR_REJECT set to TRUE, it shall perform the appropriate error handling procedure.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.2.3 Test purpose

To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 after the expiry of timer T300 when the SS transmits no response for an RRC CONNECTION REQUEST message.

8.1.2.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE.

Test Procedure

Before the test starts, an internal counter K in SS is initialized to a value = 0. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by use of selected PRACH from the available PRACH No.1 and PRACH No.2, after the operator attempts to make an outgoing call. SS ignores this message, increments K every time such a message is received and waits for T300 timer to expire. This cycle is repeated until K reaches N300. When K is equal to N300, the SS transmits the RRC CONNECTION SETUP message specified in step 6 to the UE and wait until T300 expires. The UE shall send another RRC CONNECTION REQUEST message on the uplink CCCH. SS verifies that the UE does not access the radio resource allocated in step 6. After confirming this restriction is observed, SS replies with a valid RRC CONNECTION SETUP message. The UE shall then acknowledge the establishment of RRC connection by sending the RRC CONNECTION SETUP COMPLETE message on uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		SYSTEM INFORMATION BLOCK TYPE 5	Transmit these messages on the BCCH. See specific message contents.
2				SS initializes counter K to 0. Operator is asked to make an outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
3	→		RRC CONNECTION REQUEST	
4				SS checks to see if K is equal to N300. If so, goes to step 6. Else, continues to execute step 5.
5				SS increments K. The next step is step 3.
6	←		RRC CONNECTION SETUP	Use an invalid message in ASN.1. SS waits for T300 to expire again.
7	→		RRC CONNECTION REQUEST	UE shall not access the radio resource indicated in RRC CONNECTION SETUP message sent in step 6.
8	←		RRC CONNECTION SETUP	This is a legal message. See the clause 9 in TS 34.108 on default message content for RRC.
9				The UE configures the layer 1 and layer 2.
10	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

SYSTEM INFORMATION TYPE 5 (Step 1) - FDD

- PRACH system information	2PRACHs
- PRACH info (PRACH No.1)	
- CHOICE mode	FDD
- Available Signature	'0000 0000 1111 1111'B
- Available SF	64
- Preamble scrambling code number	0
- Puncturing Limit	100
- Available Sub Channel number	'1111 1111 1111'B
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- RLC size	360
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	20 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	(This IE is repeated for TFC number.)
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Complete
- TFCS addition information	
- CHOICE CTFC Size	2 bit
- CTFC information	0
- Power offset information	
- CHOICE Gain Factors	Computed Gain Factor
- Power offset Pp-m	-5 dB
- CTFC information	Refer to clause 6.10 Parameter Set
- Power offset information	
- CHOICE Gain Factors	Signalled Gain Factor
- Gain factor ßc	10
- Gain factor ßd	15
- Reference TFC ID	Not Present
- Power offset Pp-m	-5dB
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#0)
- Available signature End Index	7 (ASC#0)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)

- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#2)
- Available signature End Index	7 (ASC#2)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#3)
- Available signature End Index	7 (ASC#3)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#4)
- Available signature End Index	7 (ASC#4)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#5)
- Available signature End Index	7 (ASC#5)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#6)
- Available signature End Index	7 (ASC#6)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#7)
- Available signature End Index	7 (ASC#7)
- Assigned Sub-channel Number	'1111'B
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
CHOICE mode	FDD
- Primary CPICH DL TX power	31
- Constant value	–10
- PRACH power offset	
- Power Ramp Step	3dB
- Preamble Retrans Max	2
- RACH transmission parameters	
- Mmax	2
- NB01min	3 slot
- NB01max	10 slot
- AICH info	
- Channelisation code	3
- STTD indicator	FALSE
- AICH transmission timing	0

- PRACH info (PRACH No.2)	
- CHOICE mode	FDD
- Available Signature	'0000 0000 1111 1111'B
- Available SF	64
- Preamble scrambling code number	0
- Puncturing Limit	100
- Available Sub Channel number	'1111 1111 1111'B
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- RLC size	360
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	20 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Complete
- TFCS addition information	
- CHOICE CTFC Size	2 bit
- CTFC information	0
- Power offset information	
- CHOICE Gain Factors	Computed Gain Factor
- Power offset Pp-m	-5 dB
- CTFC information	1
- Power offset information	
- CHOICE Gain Factors	Signalled Gain Factor
- Gain factor ßc	10
- Gain factor ßd	15
- Reference TFC ID	Not Present
- Power offset Pp-m	-5dB
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#0)
- Available signature End Index	7 (ASC#0)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#2)
- Available signature End Index	7 (ASC#2)
- Assigned Sub-channel Number	'1111'B

- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#3)
- Available signature End Index	7 (ASC#3)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#4)
- Available signature End Index	7 (ASC#4)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#5)
- Available signature End Index	7 (ASC#5)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#6)
- Available signature End Index	7 (ASC#6)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#7)
- Available signature End Index	7 (ASC#7)
- Assigned Sub-channel Number	'1111'B
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
CHOICE mode	FDD
- Primary CPICH DL TX power	31
- Constant value	–10
- PRACH power offset	
- Power Ramp Step	3dB
- Preamble Retrans Max	2
- RACH transmission parameters	
- Mmax	2
- NB01min	3 slot
- NB01max	10 slot
- AICH info	
- Channelisation code	4
- STTD indicator	FALSE
- AICH transmission timing	0

SYSTEM INFORMATION TYPE 5 (Step 1) – 3.84 Mcps TDD

- PRACH system information	2PRACHs
- PRACH info (PRACH No.1)	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Timeslot Number	14
- PRACH Channelisation Code	
- CHOICE SF	8
- Channelisation Code List	
- Channelisation Code	8/1
- Channelisation Code	8/2
- Channelisation Code	8/3
- Channelisation Code	8/4
- PRACH Midamble	Direct
-PNBSCH allocation	Not Present
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Transport Time Interval	Not Present
- Number of Transport Blocks	1
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	10 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	Not Present
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#0)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#1)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#2)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#3)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#4)
- CHOICE subchannel size	Size1
- ASC Setting	

- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#5)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#6)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#7)
- CHOICE subchannel size	Size1
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- CHOICE mode	TDD
- PRACH info (PRACH No.2)	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Timeslot Number	14
- PRACH Channelisation Code	
- CHOICE SF	8
- Channelisation Code List	
- Channelisation Code	8/5 where i denotes an unassigned code
- Channelisation Code	8/6 where i denotes an unassigned code
- Channelisation Code	8/7 where i denotes an unassigned code
- Channelisation Code	8/8 where i denotes an unassigned code
- PRACH Midamble	Direct
-PNBSCH allocation	Not Present
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Transport Time Interval	Not Present
- Number of Transport Blocks	1
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	10 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	Not Present
- PRACH partitioning	
- Access Service Class	

- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#0)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#1)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#2)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#3)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#4)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#5)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#6)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#7)
- CHOICE subchannel size	Size1
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- CHOICE mode	TDD

SYSTEM INFORMATION TYPE 5 (Step 1) – 1.28 Mcps TDD

- PRACH system information	2PRACHs
- PRACH info (PRACH No.1)	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- SYNC_UL info	
- SYNC_UL codes bitmap	'11110000'B
- $PRX_{UpPCHdes}$	10
- Power Ramping Step	3
- Max SYNC_UL Transmissions	8
- Mmax	32
- PRACH Definition	
- Timeslot Number	
- CHOICE TDD option	1.28 Mcps TDD
- Timeslot number	1
- PRACH Channelisation Code	
- Channelisation Code List	
- Channelisation Code	8/1
- Midamble shift and burst type	
- CHOICE TDD option	1.28 Mcps TDD
- Midamble Allocation Mode	Default
- Midamble Configuration	8
- Midamble Shift	Not Present
- FPACH info	
- Timeslot number	6
- Channelisation code	16/16
- Midamble Shift and burst type	
- CHOICE TDD option	1.28 Mcps TDD
- Midamble Allocation Mode	Default
- Midamble Configuration	16
- Midamble Shift	Not Present
- WT	4
- PNBSCH allocation	Not Present
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Transport Time Interval	Not Present
- Number of Transport Blocks	1
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	10 ms
- Type of channel coding	Convolutional
- Coding Rate	½
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	Not Present
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#0)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD

- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#1)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#2)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#3)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#4)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#5)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#6)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘11110000’B (ASC#7)
- CHOICE subchannel size	Size1
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- CHOICE mode	TDD
- PRACH info (PRACH No.2)	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- SYNC_UL info	
- SYNC_UL codes bitmap	‘11110000’B
- $PRX_{UpPCHdes}$	10
- Power Ramping Step	1
- Max SYNC_UL Transmissions	8
- Mmax	32
- PRACH Definition	
- Timeslot Number	

- CHOICE TDD option	1.28 Mcps TDD
- Timeslot number	1
- PRACH Channelisation Code	
- Channelisation Code List	
- Channelisation Code	8/2
- Midamble shift and burst type	
- CHOICE TDD option	1.28 Mcps TDD
- Midamble Allocation Mode	Default
- Midamble Configuration	8
- Midamble Shift	Not Present
- FPACH info	
- Timeslot number	An available down-link timeslot
- Channelisation code	16/15
- Midamble Shift and burst type	
- CHOICE TDD option	1.28 Mcps TDD
- Midamble Allocation Mode	Default
- Midamble Configuration	16
- Midamble Shift	Not Present
- WT	4
- PNBSCH allocation	Not Present
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Transport Time Interval	Not Present
- Number of Transport Blocks	1
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	10 ms
- Type of channel coding	Convolutional
- Coding Rate	½
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	Not Present
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#0)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#1)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#2)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	‘00001111’B (ASC#3)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD

- Available SYNC_UL codes indices	'00001111'B (ASC#4)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#5)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#6)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#7)
- CHOICE subchannel size	Size1
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- CHOICE mode	TDD

RRC CONNECTION SETUP (Step 6)

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Out of range value

8.1.2.2.5 Test requirement

After step 2 the UE shall select either PRACH No.1 or PRACH No.2 and transmit an RRC CONNECTION REQUEST message.

After step 6 the UE shall re-send another RRC CONNECTION REQUEST message and not access any radio resources specified in RRC CONNECTION SETUP message sent in step 6.

After step 9 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message and establish an RRC connection on the DCCH logical channel.

8.1.2.3 RRC Connection Establishment: Failure (V300 is greater than N300)

8.1.2.3.1 Definition

8.1.2.3.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message. This message shall include the IE "Initial UE identity" on the uplink CCCH.

2. In the case of a failure to establish the RRC connection after (N300+1) attempts, the UE goes back to idle mode.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.3.3 Test purpose

To confirm that the UE stops retrying to establish the RRC connection if V300 is greater than N300 and goes back to idle mode.

8.1.2.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, SS initializes an internal counter K to 0. The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by an outgoing call operation. SS shall not respond to any RRC CONNECTION REQUEST message, instead the counter K is increased by 1 every time such a message is received. To arrive at the verdict, the SS checks that a total of (N300+1) such messages are received.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initializes counter K to 0 and then prompts the operator to make an outgoing call.
2	→		RRC CONNECTION REQUEST	
3				SS increments K by 1.
4				If K is greater than N300, goes to step 5 else proceed to step 2.
5				SS monitor the uplink CCCH for a time period enough for UE to goes back to normal service. The exact amount of time to wait shall be derived from TS related to cell selection. If any uplink transmission is detected, the test fails.

Specific Message Contents

None

8.1.2.3.5 Test requirement

After step 5, counter K shall be equal to (N300+1) and there shall be no uplink transmission in the monitoring period specified in step 5.

8.1.2.4 RRC Connection Establishment: Reject ("wait time" is not equal to 0)

8.1.2.4.1 Definition

8.1.2.4.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message . This message shall include the IE "Initial UE identity" and is to be sent on the uplink CCCH.

2. After the UE receives an RRC CONNECTION REJECT message which includes IE "wait time" not set to 0, and neither IE "frequency info" nor IE "system info" is present, the UE shall wait for a period specified in the IE "wait time". Thereafter re-transmit an RRC CONNECTION REQUEST message to attempt to establish the RRC connection again. However, either IE "frequency info" or IE "system info" is available in the message, the UE shall attempt to perform cell reselection using these information.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.4.3 Test purpose

To confirm that the UE retries to establish the RRC connection after the "wait time" if the UE receives an RRC CONNECTION REJECT message which includes the IE "wait time" not set to 0.

To confirm that the UE performs a cell reselection when receiving an RRC CONNECTION REJECT message, containing relevant frequency information of the target cell to be re-selected.

8.1.2.4.4 Method of test

Initial Condition

System Simulator: 2 cells – both cell 1 and cell 2 are active and suitable for camping, but cell 1 is transmitted using a larger power. Cell 1 and cell 2 are being transmitted from different 2 UARFCNs.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE.

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by an outgoing call operation in cell 1. SS rejects the first request by transmitting an RRC CONNECTION REJECT message which indicates a non-zero wait time. In this message, frequency information for cell 2 is available. SS then waits for RRC CONNECTION REQUEST message on the uplink CCCH of cell 2. SS will also monitor the uplink of cell 1 simultaneously to ensure that all transmission activities from cell 1 have ceased. When the UE has successfully camp onto cell 2, it shall send an RRC CONNECTION REQUEST with the same establishment cause as its previous attempt in cell 1. SS responds with an RRC CONNECTION REJECT message, indicating a non-zero "wait time" and omitting the IE "Redirection Info". The UE shall observe the wait time period indicated. After the wait time has elapsed, the UE shall re-transmit RRC CONNECTION REEQUEST again. Finally, SS transmits an RRC CONNECTION SETUP message to establish an RRC connection with the UE, and the UE replies with an RRC CONNECTION SETUP COMPLETE message and enters CELL_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	RRC CONNECTION REQUEST	SS prompts the operator to make an outgoing call in cell 1.
2		←	RRC CONNECTION REJECT	This message shall includes the IE "wait time" set to 15 seconds and IE "frequency info" set to the UARFCN of cell 2.
3				SS waits for a period of time sufficient for UE to reselect to cell 2. At the same time, it monitors the uplink of cell 1 to make sure that all transmissions have ceased.
4		→	RRC CONNECTION REQUEST	UE shall attempt to re-start an RRC connection establishment procedure in cell 2. The establishment cause shall remain unchanged.
5		←	RRC CONNECTION REJECT	This message shall include the IE "wait time" set to 15 seconds, but with IE "Redirection Info" absent.
6		→	RRC CONNECTION REQUEST	SS waits until the duration specified in IE "wait time" has elapsed and then listens to the uplink CCCH for a second RRC CONNECTION REQUEST message.
7		←	RRC CONNECTION SETUP	SS sends the message to UE, to setup an RRC connection with the UE.
8				The UE shall configure the layer 2 and layer 1 in order to access the uplink and downlink DCCH assigned.
9		→	RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

RRC CONNECTION REQUEST (Step 1)

Information Element	Value/remark
Initial UE Identity	Must be equal to U-RNTI assigned previously
Initial UE Capability	Must be compatible with UE settings in TS25.306
Establishment Cause	Must be "Originating Call"

RRC CONNECTION REJECT (Step 2) - FDD

Information Element	Value/remark
Wait time	15 seconds
Redirection Info	
Frequency Info	
CHOICE mode	FDD
UARFCN uplink (Nu)	Set to a different UARFCN from uplink carrier of cell 1
UARFCN downlink (Nd)	Not present – assuming a duplex distance of 190MHz.

RRC CONNECTION REJECT (Step 2) – TDD

Information Element	Value/remark
Wait time	15 seconds
Redirection Info	
Frequency Info	
CHOICE Mode	TDD
UARFCN (Nt)	Set to a different UARFCN from the carrier of cell 1

RRC CONNECTION REQUEST (Step 4 and step 6)

Same requirement as in step 1.

RRC CONNECTION REJECT (Step 5)

Information Element	Value/remark
Wait time	15 seconds
Redirection Info	Not present

8.1.2.4.5 Test requirement

After step 3 the UE shall have successfully re-selected to cell 2, using information transmitted in IE "frequency info" of RRC CONNECTION REJECT message. UE shall trigger the start of RRC connection establishment by transmitting RRC CONNECTION REQUEST. The establishment cause shall be similar to the message sent in step 1.

After step 5 the UE shall observe the period specified in IE "wait time" of an RRC CONNECTION REJECT message and not transmit an RRC CONNECTION REQUEST message in this period.

After step 7 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message to SS on uplink DCCH and then establish an RRC connection.

8.1.2.5 RRC Connection Establishment: Reject ("wait time" is not equal to 0 and V300 is greater than N300)

8.1.2.5.1 Definition

8.1.2.5.2 Conformance requirement

The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message . This message shall include the IE "Initial UE identity" and is to be sent on the uplink CCCH.

After the UE receives an RRC CONNECTION REJECT message which includes IE "wait time" not set to 0, and neither IE "frequency info" nor IE "system info" is present, the UE shall wait for a period specified in the IE "wait time". Thereafter it re-transmits an RRC CONNECTION REQUEST message to attempt to establish the RRC connection again. In the case of a failure to establish the RRC connection after (N300+1) attempts, the UE goes back to idle mode.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.5.3 Test purpose

To confirm that the UE retries to establish the RRC connection after the "wait time" if the UE receives an RRC CONNECTION REJECT message which specifies a non-zero IE "wait time".

To confirm that the UE stops retrying to establish the RRC connection if V300 is greater than N300 and goes back to idle mode.

8.1.2.5.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, SS initializes an internal counter K to 0. The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH, triggered by an outgoing data call operation. SS rejects all requests by transmitting an RRC CONNECTION REJECT message which indicates a non-zero wait time and the counter K is increased by 1 every time such a message is received. To arrive at the verdict, the SS checks that a total of (N300+1) such messages are received.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initializes counter K to 0 and then prompts the operator to make an outgoing data call.
2	→		RRC CONNECTION REQUEST	Shall be sent on CCCH and contain the correct establishment cause.
3	←		RRC CONNECTION REJECT	This message includes the IE "wait time" set to 15 seconds.
4				SS increments K by 1.
5				If K is greater than N300, goes to step 6. Else SS waits for 15 sec before proceeding to step 2.
6				SS monitor the uplink CCCH for a time period enough for UE to goes back to normal service. The exact amount of time to wait shall be derived from TS related to cell selection. If any uplink transmission is detected, the test fails.

Specific Message Contents

RRC CONNECTION REQUEST (Step 2)

Information Element	Value/remark
Initial UE Identity	Must be equal to U-RNTI assigned previously
Initial UE Capability	Must be compatible with UE settings in TR25.926
Establishment Cause	Must be "Originating Call"

RRC CONNECTION REJECT (Step 3)

Information Element	Value/remark
Wait time	15 seconds

8.1.2.5.5 Test requirement

After step 6, counter K shall be equals to (N300+1) and there shall be no uplink transmission in the monitoring period specified in step 6.

8.1.2.6 RRC Connection Establishment: Reject ("wait time" is set to 0)

8.1.2.6.1 Definition

8.1.2.6.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message on the uplink CCCH.

2. In the case of a failure to establish the RRC connection by the reception of a RRC CONNECTION REJECT message which contains IE "wait time" equals to 0, the UE shall go back to idle mode immediately.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.6.3 Test purpose

To confirm that the UE goes back to idle mode, if the SS transmits an RRC CONNECTION REJECT message which includes IE "wait time" set to 0. To confirm that the UE ignores an RRC CONNECT REJECT message not addressed to it. To confirm that the UE is capable of handling an erroneous RRC CONNECTION REJECT message correctly.

8.1.2.6.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE.

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by making an outgoing call. After the SS receives this message, it transmits an RRC CONNECTION REJECT message which is not addressed to the UE. The UE shall disregard this message and proceed to re-transmit RRC CONNECTION REQUEST message upon T300 timer expiry. SS answers the second RRC CONNECTION REQUEST message by transmitting an RRC CONNECTION REJECT message with IE "wait time" set to 15 seconds, but without the mandatory IE "rejection cause". The UE shall continue to send the third RRC CONNECTION REQUEST message after a 15 second lapse. Next, the SS sends a legal RRC CONNECTION REJECT message which is expected to cause the UE to move to idle mode spontaneously. To confirm that finally the UE goes back to idle mode immediately after receiving the reject message, SS shall monitor the uplink CCCH for the next 60 second and verify that there is no further transmission in the uplink direction.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	Test operator is prompted to make an out-going call,
2	←		RRC CONNECTION REJECT	IE "Initial UE identity" contains an identity different from any of the UE identities available.
3	→		RRC CONNECTION REQUEST	UE shall continue to send this message after T300 time-out.
4	←		RRC CONNECTION REJECT	IE "Reject Cause" is omitted, IE "wait time" is set to 15 seconds (maximum).
5	→		RRC CONNECTION REQUEST	UE shall continue to send this message after the expiry of "wait time" IE indicated in RRC CONNECTION REJECT message in step 4.
6	←		RRC CONNECTION REJECT	IE "wait time" is set to 0.
7				The UE goes back to idle mode..

Specific Message Contents

RRC CONNECTION REQUEST (Step 1)

Information Element	Value/remark
Initial UE Identity	Checked to see if it is set to IMSI stored in the test TEST USIM card.
Establishment Cause	Checked to see if set to one of the supported originating call types
Protocol Error Indicator	Checked to see if set to "FALSE"
Measured Results on RACH	Checked to see if it is absent

RRC CONNECTION REJECT (Step 2)

Information Element	Value/remark
Initial UE Identity	
IMSI	Set to an arbitrary octet string of length 7 bytes, which is different from the IMSI stored in TEST USIM.
Wait time	15 seconds
Redirection Info	Not present

RRC CONNECTION REQUEST (Step 3)

Information Element	Value/remark
Initial UE Identity	Checked to see if it is set to IMSI stored in the test TEST USIM card.
Establishment Cause	Checked to see if set to one of the supported originating call types
Protocol Error Indicator	Checked to see if set to "FALSE"
Measured Results on RACH	Checked to see if it is absent

RRC CONNECTION REJECT (Step 4)

Information Element	Value/remark
Initial UE Identity	
IMSI	Set to the identical octet string as the IMSI stored in the TEST USIM card.
Reject Cause	Not Present
Wait time	15 seconds (Maximum)
Redirection Info	Not Present

RRC CONNECTION REQUEST (Step 5)

Information Element	Value/remark
Initial UE Identity	Checked to see if it is set to IMSI stored in the test TEST USIM card.
Establishment Cause	Checked to see if set to one of the supported originating call types
Protocol Error Indicator	Checked to see if set to "TRUE"
Measured Results on RACH	Checked to see if it is absent

RRC CONNECTION REJECT (Step 6)

Information Element	Value/remark
Initial UE Identity	
IMSI	Set to the identical octet string as the IMSI stored in the TEST USIM card.
Reject Cause	Congestion
Wait time	0 second
Redirection Info	Not present

8.1.2.6.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION REQUEST message on uplink CCCH.

After step 4 the UE shall re-transmit an RRC CONNECTION REQUEST message on the uplink CCCH 15 seconds after the transmission of the second downlink RRC CONNECTION REJECT message. In this message, the "protocol error indicator" IE shall be set to "TRUE".

After step 6 the UE shall stop sending an RRC CONNECTION REQUEST message, go back to idle mode immediately and not transmit in the uplink direction again.

8.1.2.7 RRC Connection Establishment in CELL_FACH state: Success

8.1.2.7.1 Definition

8.1.2.7.2 Conformance requirement

During the RRC connection establishment, the UTRAN might assign common physical resource to the UE using an RRC CONNECTION SETUP message. When no information about the physical channels accessible is available from the message, the UE shall utilize the PRACH and S-CCPCH information transmitted on the BCCH and then enter the CELL_FACH. Subsequently, the UE shall establish the required signalling links with the UTRAN using common physical resources.

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.7.3 Test Purpose

To confirm that the UE is able to enter CELL_FACH state and setup signalling links using common physical channels.

8.1.2.7.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After the SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE, and then transmits an RRC CONNECTION SETUP message to the UE within timer T300. SS then waits for the UE to transmit an RRC CONNECTION SETUP COMPLETE message on the DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	RRC CONNECTION REQUEST	Test operator is requested to make an outgoing call. The UE shall transmit this message, indicating the correct establishment cause.
2		←	RRC CONNECTION SETUP	SS omits both IE "Uplink DPCH Info" and IE "Downlink DPCH Info" from the message.
3				The UE shall configure the layer 2 and layer 1.
4		→	RRC CONNECTION SETUP COMPLETE	UE shall send this message on the DCCH, carried by the assigned PRACH resources.

Specific Message Content

RRC CONNECTION REQUEST

Information Element	Value/remark
Establishment Cause	Originating Interactive Call

RRC CONNECTION SETUP

For this message, the contents of the message to be used are basically identical to the message sub-type entitled "RRC CONNECTION SETUP message (Transition to CELL_FACH)" found in the default message content part. The following exceptions are applicable in this test:

Information Element	Value/remark
Uplink DPCH Info	Not Present
Downlink information common for all radio links	Not Present
Downlink information per radio link list	Not Present

RRC CONNECTION SETUP COMPLETE

Information Element	Value/remark
UE Radio Access Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.

8.1.2.7.5 Test requirements

After step 3 the UE shall establish the RRC connection, and transmit RRC CONNECTION SETUP COMPLETE message on the DCCH using PRACH physical resource specified in system information block messages.

8.1.2.8 RRC Connection Establishment: Invalid system information message reception

8.1.2.8.1 Definition

8.1.2.8.2 Conformance requirement

The UE shall ignore the message and shall not select the cell, if the associated a SYSTEM INFORMATION message on the BCCH which includes an invalid value in the mandatory information element which in the master information block is broadcasting.

Reference

3GPP TS 25.331 clause 8.1.1 and clause 9.

8.1.2.8.3 Test purpose

To confirm that the UE does not select the cell if the transmitted SYSTEM INFORMATION message on the BCCH which includes an invalid value in the information element in the master information block is broadcasting.

8.1.2.8.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Power off (state 1) as specified in clause 7.4 of TS 34.108.

Test Procedure

The SS broadcasts the SYSEM INFORMATION message on the BCCH which includes the PLMN Type information element having an invalid value in the master information block. When the UE is supplied the power, it finds that the SYSTEM INFORMATION message on the BCCH includes the unknown value in the mandatory information element and the UE shall ignore this message. When an outgoing call is attempted, the test operator shall be informed that the UE is in a "No Service" state. The UE shall not transmit an RRC CONNECTION REQUEST message on the uplink CCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SYSTEM INFORMATION	The SS broadcasts the SYSTEM INFORMATION message on the BCCH which includes an invalid value in the master information block.
2				The UE is supplied the power.
3				SS waits for 1 minute and then asks the test operator to attempt to make an outgoing call.
4				SS checks that no uplink transmission on CCCH is detected.

Specific Message Contents

SYSTEM INFORMATION (master information block)

The contents of a SYSTEM INFORMATION message in this test case is identical to the corresponding message found in the default contents of layer 3 messages for RRC tests, with the following exceptions:

Information Element	Value/remark
Supported PLMN Types	invalid value which is not defined

8.1.2.8.5 Test requirement

After step 3 the UE shall not transmit an RRC CONNECTION REQUEST message on the uplink CCCH.

8.1.2.9 RRC Connection Establishment: Success after Physical channel failure, Invalid message reception and Invalid configuration

8.1.2.9.1 Definition

8.1.2.9.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode. The UE shall transmit an RRC CONNECTION REQUEST message which includes the IE "Initial UE identity". This message shall be sent on the uplink CCCH.

2. In the case of a failure to establish the RRC connection at the physical channel failure after the UE receives an RRC CONNECTION SETUP message ,the UE retries to establish the RRC connection until V300 is greater than N300

3. In the case of an invalid RRC CONNECTION SETUP message is received by UE, the UE retries to establish the RRC connection until V300 is greater than N300

4. In the case of a RRC CONNECTION SETUP message is received by UE causes invalid configuration, the UE retries to establish the RRC connection until V300 is greater than N300

Reference

3GPP TS 25.331 clause 8.1.3.

8.1.2.9.3 Test purpose

To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 for the physical channel failure as the SS does not configure the physical channel which is specified in the transmitted RRC CONNECTION SETUP message. To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 when the transmitted RRC CONNECTION SETUP message causes invalid configuration in the UE.

8.1.2.9.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, an internal counter K in SS is initialised to a value = 0. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH, after the operator attempts to make an outgoing call. SS increments K every time such a message is received. Then, SS shall send a RRC CONNECTION SETUP message that contain an invalid configuration. UE shall then send RRC CONNECTION REQUEST message to SS again. Next SS transmits an RRC CONNECTION SETUP message to make the UE configure the physical channel in order to communicate on the DCCH but SS does not configure the physical channel. Then the UE detects the physical channel failure and transmits an RRC CONNECTION REQUEST message. This cycle is repeated until K reaches N300. When K is equal to N300, the SS transmits the RRC CONNECTION SETUP message and configures the physical channel. The UE shall detect "in-sync" from physical layer and then acknowledge the establishment of RRC connection by sending the RRC CONNECTION SETUP COMPLETE message on uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initialises counter K to 0. Operator is asked to make an outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
2	→		RRC CONNECTION REQUEST	SS increments K.
3				SS checks to see if K is equal to N300+1. If so, goes to step 6. Else, continues to execute step 4.
4	←		RRC CONNECTION SETUP	See message content below. SS does not configure the physical channel.
5				The next step is step 2.
6	←		RRC CONNECTION SETUP	See the clause 9 in TS 34.108 on default message content for RRC. SS configures the physical channel.
7				The UE configures the layer 1 and layer 2.
8	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

RRC CONNECTION SETUP (Step 4)

Use the same message sub-type found in Clause 9 of TS34.108, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH info	Not present

RRC CONNECTION SETUP (Step 4 and K>2)

Use the same message sub-type found in clause 9 of TS 34.108.

RRC CONNECTION REQUEST (Step 2 and K>1)

Use the same message sub-type found in clause 9 of TS34.108, with the following exceptions:

Information Element	Value/remark
Protocol error indicator	TRUE

8.1.2.9.5 Test requirement

After step 4 the UE shall re-send RRC CONNECTION REQUEST message.

After step 8 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message and establish an RRC connection.

8.1.3 RRC Connection Release

8.1.3.1 RRC Connection Release in CELL_DCH state: Success

8.1.3.1.1 Definition

8.1.3.1.2 Conformance requirement

In case of an RRC connection release from CELL_DCH state, the UTRAN transmits an RRC CONNECTION RELEASE message to the UE using unacknowledged mode on the DCCH. The UE then responds by transmitting an RRC CONNECTION RELEASE COMPLETE message using unacknowledged mode to UTRAN for N308 times, each time at the expiry of T308 timer. Then the UE leaves the RRC connected mode and initiates release of the layer 2 signalling link. The RRC Connection Release procedure ends when all UE dedicated resources (such as radio resources and radio access bearers) associated with the RRC connection are released and the UE returns to idle mode.

Reference

3GPP TS 25.331 clause 8.1.4.

8.1.3.1.3 Test purpose

To confirm that the UE releases the L2 signalling link and dedicated resources and goes back to the idle state after it receives an RRC CONNECTION RELEASE message from the SS and transmits an RRC CONNECTON RELEASE COMPLETE message to the SS for N308 times at the interval specified by the value of T308 timer.

8.1.3.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to the CELL_DCH state by prompting the operator to initiate an outgoing call. After the DCCH is established, SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the connection. SS then waits for the UE to transmit an RRC CONNECTION RELEASE COMPLETE message using unacknowledged mode. SS checks to see if P such messages has been received at each expiry of T308 timer. P is equal to the value of IE "Number of RRC Message Transmissions" in an RRC CONNECTION RELEASE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state after a successful RRC connection establishment by virtue of the operator making an outgoing call.
2	←		RRC CONNECTION RELEASE	SS disconnect the connection established. The value in IE "Number of RRC Message Transmissions" is arbitrarily chosen from 4 to 8 and denoted by P.
3	→		RRC CONNECTION RELEASE COMPLETE	SS waits for the arrival of N308 such message at the expiry of each T308 timer, using unacknowledged mode.
4				The UE releases L2 signalling link and dedicated resources. Then the UE goes to idle mode.

Specific Message Content

RRC CONNECTION RELEASE (Step 2)

Information Element	Value/remark
Number of RRC Message Transmission	Arbitrarily chosen between 4 and 8

8.1.3.1.5 Test requirement

After step 2 the UE shall start to transmit P times RRC CONNECTION RELEASE COMPLETE messages at the expiry of each T308 timer.

After step 3 the UE shall initiate the release L2 signalling link and dedicated resources, then it shall go to idle mode.

8.1.3.2 RRC Connection Release using on DCCH in CELL_FACH state: Success

8.1.3.2.1 Definition

8.1.3.2.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in the network may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. Upon the reception of this message, the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to UTRAN on the DCCH and goes back to idle mode after it receives an RLC confirmation from the UTRAN.

Reference

3GPP TS 25.331 clause 8.1.4.

8.1.3.2.3 Test purpose

To confirm that the UE releases the L2 signalling link and resources and goes back to the idle state after it receives an RRC CONNECTION RELEASE message on downlink DCCH from the SS. It shall transmit an RRC CONNECTON RELEASE COMPLETE message using acknowledged mode on uplink DCCH to the SS.

8.1.3.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to an initial state of CELL_FACH. After the successful establishment of the RRC connection, the SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the radio link. When the UE receives this message the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS. Finally, SS checks that the UE performs proper release of all radio resources and then goes back to idle mode.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	SS sends this message using unacknowledged mode RLC operations on the uplink DCCH.
3	→		RRC CONNECTION RELEASE COMPLETE	The UE transmits this message using acknowledged mode.
4				The UE releases L2 signalling link and radio resources. Then the UE goes to idle mode.

Specific Message Contents

None.

8.1.3.2.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode then it shall receive a response for this message from the SS-RLC.

After step 3 the UE shall release its L2 signalling link and radio resources, then it shall go back to idle mode.

8.1.3.3 RRC Connection Release using on CCCH in CELL_FACH state: Success

8.1.3.3.1 Definition

8.1.3.3.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in the network may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the CCCH. Upon the reception of this message, the UE shall release the RRC connection immediately, without replying with a RRC CONNECTION RELEASE COMPLETE message on the uplink.

Reference

3GPP TS 25.331 clause 8.1.4.

8.1.3.3.3 Test purpose

To confirm that the UE releases all its radio resources upon the reception of a RRC CONNECTION RELEASE message on the downlink CCCH, without transmitting RRC CONNECTION RELEASE COMPLETE message on the uplink.

8.1.3.3.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to an initial state of CELL_FACH. After the successful establishment of the RRC connection, SS transmits RRC CONNECTION RELEASE message on the downlink CCCH. The UE shall terminate the RRC connection and release all radio resources allocated to it. SS monitors the uplink DCCH and CCCH to verify that no transmission is detected.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	SS transmits this message with the contents identical to that found in TS 34.108 clause 9 on downlink CCCH.
3				SS waits for a period equivalent to 60 seconds. The UE shall not send any response message on uplink direction during this period. It shall release the radio resources allocated and return to idle mode.

Specific Message Contents

None.

8.1.3.3.5 Test requirement

After step 2 the UE shall release all its radio resources, return to idle mode, without transmitting RRC CONNECTION RELEASE COMPLETE message on the uplink direction.

8.1.3.4 RRC Connection Release in CELL_FACH state: Failure

8.1.3.4.1 Definition

8.1.3.4.2 Conformance requirement

In case of RRC connection release from CELL_FACH state, the RRC layer entity in the network issues an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. When the UE does not succeed to transmit the RRC CONNECTION RELEASE COMPLETE message using acknowledged mode, it shall release all its radio resources, enter idle mode and the procedure ends on the UE side.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.4.3 Test purpose

To confirm that the UE releases all its radio resources and enters idle mode when the UE does not succeed in transmitting the RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS (i.e. the UE-RLC cannot receive acknowledgement for the transmission of the RRC CONNECTION RELEASE COMPLETE message from SS).

8.1.3.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

At the start of the test, the UE is brought to CELL_FACH state. When the RRC connection has been established, the SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the radio link. When the UE receives this message the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS. The SS ignores the message and does not transmit a STATUS PDU of RLC for this message. SS checks to see that UE continues to release all its radio resources and then enters idle mode.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought into CELL_FACH state by asking the operator to perform an outgoing call attempt. clause
2	←		RRC CONNECTION RELEASE	SS ask to disconnect the radio link
3	→		RRC CONNECTION RELEASE COMPLETE	The UE transmits this message using acknowledged mode. The SS ignores this message and shall not transmit a STATUS PDU of RLC for this message.
4				SS checks to make sure that UE releases its all radio resources and enter idle mode.

Specific Message Contents

None

8.1.3.4.5 Test requirement

After step 3 the UE shall release its L2 signalling link and radio resources then it shall go to idle mode.

8.1.3.5 RRC Connection Release in CELL_FACH state: Invalid message

8.1.3.5.1 Definition

8.1.3.5.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in UTRAN may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. If an invalid RRC CONNECTION RELEASE message is received by the UE, the UE shall activate the appropriate error-handling mechanism and report the error to the UTRAN. After this, the UE shall release the RRC connection.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.5.3 Test purpose

When the UE receives an invalid RRC CONNECTION RELEASE message on the downlink DCCH, it shall transmit an RRC CONNECTON RELEASE COMPLETE message that includes the appropriate error cause on the uplink DCCH. Thereafter, it shall release the RRC connection.

8.1.3.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to an initial state of CELL_FACH. SS transmits an RRC CONNECTION RELEASE message on the DCCH to request to disconnect the RRC connection. However, the message contains an invalid value in the IE "Release cause". As a result, the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message on the uplink DCCH, which includes the IE "Error indication". This IE shall contain "Failure cause" IE which is set to "Protocol error" and "Protocol error information" IE which is set to "Information element value not comprehended". The UE shall release the RRC connection and go back to idle mode after transmitting the RRC CONNECTION RELEASE COMPLETE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	See specific message contents for this message
3	→		RRC CONNECTION RELEASE COMPLETE	The IE "Protocol error cause" found in IE "Protocol error information" shall be set to "Information element value not comprehended".
4				The UE shall release the signalling link and radio resources, and then return to idle mode.

Specific Message Contents

RRC CONNECTION RELEASE (Step 2)

Information Element	Value/remark
Release cause	invalid value

RRC CONNECTION RELEASE COMPLETE

Information Element	Value/remark
Error Indication	
Failure cause	Protocol error
Protocol error information	
Protocol error cause	Information element value not comprehended

8.1.3.5.5 Test requirement

After step2 the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message which includes the appropriate cause values in IE "Error Indication".

After step3 the UE shall release its L2 signalling link and radio resources, then it shall go back to idle mode.

8.1.4 Void

8.1.5 UE capability

8.1.5.1 UE Capability in CELL_DCH state: Success

8.1.5.1.1 Definition

8.1.5.1.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE or if the UTRAN needs an update of the UE's UMTS capability information or of its inter-system classmark.

   When the UE receives a UE CAPABILITY ENQUIRY message, the UE transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. Then the UTRAN transmits a UE CAPABILITY INFORMATION CONFIRM message.

   If during the execution of UE capability update procedure, an invalid UE CAPABILITY INFORMATION CONFIRM is received, the UE shall respond with RRC STATUS message and decide whether to re-transmit UE CAPABILITY INFORMATION message by comparing its internal counter against N304.

Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

8.1.5.1.3 Test purpose

To confirm that the UE transmits a UE CAPABILITY INFORMATION message after it receives a UE CAPABILITY ENQUIRY message from the SS. To confirm that the UE indicate an invalid message reception when erroneous downlink UE CAPABILITY ENQUIRY and UE CAPABILITY INFORMATION CONFIRM messages are received. The UE shall transmit RRC STATUS message with the correct error cause value to SS.

8.1.5.1.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to the CELL_DCH state after a successful outgoing call attempt. The SS transmits an erroneous UE CAPABILITY ENQUIRY message containing invalid value in the IE "Capability update requirement". After receiving such a message, the UE shall report the error using RRC STATUS message with the appropriate error cause specified. Then SS transmits a UE CAPABILITY ENQUIRY message which includes the IE "Capability update requirement", the UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "UE radio access capability" IE. The SS transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE to complete the test. Then SS initiates another UE capability update procedure by transmitting the same UE CAPABILITY ENQUIRY using as in step 4. The UE shall reply with a UE CAPABILITY

INFORMATION message on the uplink DCCH. When SS receives this message, it transmit an erroneous UE CAPABILITY INFORMATION CONFIRM message. The content of this message is lack of all IE. The UE shall detect a protocol error and send RRC STATUS message to report this event. After receiving RLC acknowledgement for this message, the UE shall re-transmit UE CAPABILITY INFORMATION message on the uplink DCCH by the expiry of T304. SS completes this test by an error-free UE CAPABILITY INFORMATION CONFIRM message similar to the message sent in step 6.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2	←		UE CAPABILITY ENQUIRY	See specific message contents for this message
3	→		RRC STATUS	The IE "Protocol error cause" found in IE "Protocol error information" shall be set to "Information element value not comprehended"
4	←		UE CAPABILITY ENQUIRY	Use default message.
5	→		UE CAPABILITY INFORMATION	Use default message.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message.
7	←		UE CAPABILITY ENQUIRY	Same as in step 4.
8	→		UE CAPABILITY INFORMATION	Shall be the same message content as in step 5.
9	←		UE CAPABILITY INFORMATION CONFIRM	See specific message contents for this message
10	→		RRC STATUS	UE shall detect an error and then transmit this message.
11	→		UE CAPABILITY INFORMATION	UE shall re-transmit this message after T304's expiry.
12	←		UE CAPABILITY INFORMATION CONFIRM	SS sends an error-free message to acknowledge the receipt of the uplink message.

Specific Message Contents

UE CAPABILITY ENQUIRY (Step 2)

Information Element	Value/remark
Capability update requirement	
- UE radio access FDD capability update requirement	TRUE
- UE radio access TDD capability update requirement	FALSE
- System specific capability update requirement list	
- System specific capability update requirement	invalid value

RRC STATUS (Step 3)

Information Element	Value/remark
Identification of received messag type - Received message type - RRC transaction identifier Protocol Error Information - Protocol Error Cause	 Checked to see if set to "UE CAPABILITY ENQUIRY" Checked to see if set to the same value in the UE CAPABILITY ENQUIRY message Checked to see if set to "Information element not comprehended"

UE CAPABILITY INFORMATION CONFIRM (Step 9)

Information Element	Value/remark
All IEs	Not Present

RRC STATUS (Step 10)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 Checked to see if set to "ASN.1 violation or encoding error"

8.1.5.1.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH, reporting the error with protocol error cause set to "Information element value not comprehended".

After step 4 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH to respond to the UE CAPABILITY ENQUIRY message.

After step 9, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 10, the UE shall re-transmit the UE CAPABILITY INFORMATION message with a similar content as in step 8.

8.1.5.2 UE Capability in CELL_DCH state: Success after T304 timeout

8.1.5.2.1 Definition

8.1.5.2.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE, if the UTRAN needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. After the UE receives a UE CAPABILITY ENQUIRY message, it transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. If it fails to receive a UE CAPABILITY INFORMATION CONFIRM message, the UE re-transmits another UE CAPABILITY INFORMATION message until V304 is greater than N304.

Reference

3GPP TS 25.331 clause 8.1.6 and 8.1.7.

8.1.5.2.3 Test purpose

To confirm that the UE re-transmits a UE CAPABILITY INFORMATION message until V304 is greater than N304, after the expiry of timer T304 when the UE cannot receive a UE CAPABILITY INFORMATION CONFIRM message in response to a UE CAPABILITY INFORMATION message.

8.1.5.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_DCH state. When the SS transmits a UE CACAPABILITY ENQUIRY message which includes the "Capability update requirement" IE, the UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "UE radio access capability" IE. The SS does not transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE, resulting in the T304 timer to expire. SS shall observe that the UE attempts to transmit a UE CAPABILITY INFORMATION message again. The UE shall re-transmit N304 times, and SS transmits a UE CAPABILITY INFORMATION CONFIRM message to answer the last request and completes this test procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state. SS sets internal counter K =0
2	←		UE CAPABILITY ENQUIRY	Including the IE "Capability update requirement".
3	→		UE CAPABILITY INFORMATION	Including the "UE radio access capability".
4				If K is equal to N304, then proceed to step 6.
5				The SS does not transmit a response and wait for T304 timer to expire. K=K+1 and goes to step 3.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message contents

Specific Message Contents

None

8.1.5.2.5 Test requirement

After step 3 the UE shall re-transmits a UE CAPABILITY INFORMATION message on the uplink DCCH, after each expiry of timer T304. The UE CAPABILITY INFORMATION message shall contain IE "UE radio access capability" indicating the settings found in PIC/PIXIT statements. After (N304) re-transmissions, the UE shall receive a UE CAPABILITY INFORMATION CONFIRM message.

8.1.5.3 UE Capability in CELL_DCH state: Failure (After N304 re-transmissions)

8.1.5.3.1 Definition

8.1.5.3.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE if the UTRAN needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. In the case of a failure to transmit a UE CAPABILITY INFORMATION in excess of N304 times, the UE initiates the cell update procedure.

Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

8.1.5.3.3 Test purpose

To confirm that the UE stops retrying to transmit a UE CAPABILITY INFORMATION message if V304 is greater than N304. It then initiates cell update procedure.

8.1.5.3.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_DCH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the "Capability update requirement" IE, the UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "UE radio access capability" IE. The SS does not respond with a UE CAPABILITY INFORMATION CONFIRM message but keeps a count on the number of messages received. When the T304 timer expires, the UE shall transmit a UE CAPABILITY INFORMATION message again. After sending (N304+1) messages, the UE shall stop sending UE CAPABILITY INFORMATION messages and initiates the cell update procedure. SS allows UE to return to "connected state" by issuing CELL UPDATE CONFIRM message on the downlink DCCH. Then UE shall reconfigured its physical channel according to the CELL UPDATE CONFIRM message and respond with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to SS.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE starts from CELL_DCH state. SS sets counter K to 0
2	←		UE CAPABILITY ENQUIRY	Use default message
3	→		UE CAPABILITY INFORMATION	Use default message
4				The SS does not transmit a response and allows T304 timer to expire. SS increments counter K If K is greater than N304, proceeds to step 5 else returns to 3.
5	→		CELL UPDATE	The UE assumes that radio link failure has occurred and transmits this message which includes IE "Cell update cause" set to "radio link failure".
6	←		CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
7				The SS configure the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
8	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

CELL UPDATE CONFIRM (Step 6) - FDD

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
RRC State indicator	CELL_DCH
Frequency info	
- CHOICE mode	FDD
- UARFCN uplink(Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink(Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- SCCPCH information for FACH	Not Present

CELL UPDATE CONFIRM (Step 6) – 3.84 Mcps TDD

Information Element	**Value/remark**
U-RNTI	Same as CELL UPDATE message in step 5
RRC State indicator	CELL_DCH
Frequency info	
- CHOICE mode	TDD
- UARFCN (Nt)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	30dBm
CHOICE Mode	TDD
Downlink information for each radio links	
- Primary CCPCH info	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- CHOICE SyncCase	Not Present
- Cell Parameters ID	Not Present
- Block STTD indicator	FALSE
- Downlink DPCH info for each RL	
- CHOICE mode	TDD
- DL CCTrCh List	
- TFCS ID	1
- Time info	
- Activation time	Not Present (default)
- Duration	Not Present (default)
- Common timeslot info	Not Present (default)
- Downlink DPCH timeslots and codes	Not Present (default)
- UL CCTrCH TPC List	Not Present (default)

CELL UPDATE CONFIRM (Step 6) – 1.28 Mcps TDD

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
RRC State indicator	CELL_DCH
Frequency info	
- CHOICE mode	TDD
- UARFCN (Nt)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	30dBm
CHOICE Mode	TDD
Downlink information for each radio links	
- Primary CCPCH info	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- TSTD indicator	FALSE
- Cell Parameters ID	Not Present
- Block STTD indicator	FALSE
- Downlink DPCH info for each RL	
- CHOICE mode	TDD
- DL CCTrCh List	
- TFCS ID	1
- Time info	
- Activation time	Not Present (default)
- Duration	Not Present (default)
- Common timeslot info	Not Present (default)
- Downlink DPCH timeslots and codes	Not Present (default)
- UL CCTrCH TPC List	Not Present (default)

8.1.5.3.5 Test requirement

After step 2, the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH. The UE shall re-transmit this message for N304 times.

After step 4, the UE shall initiate the cell update procedure.

After step 6, UE shall respond with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message after it has configured L1 according to the CELL UPDATE CONFIRM message in step 6.

8.1.5.4 UE Capability in CELL_FACH state: Success

8.1.5.4.1 Definition

8.1.5.4.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network(s) supported by the UE. UTRAN initiates this procedure when it needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. When the UE receives a UE CAPABILITY ENQUIRY message, the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH.

3. If during the execution of UE capability update procedure, an invalid UE CAPABILITY INFORMATION CONFIRM is received, the UE shall respond with RRC STATUS message and

decide whether to re-transmit UE CAPABILITY INFORMATION message by comparing its internal counter against N304.

Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

8.1.5.4.3 Test purpose

To confirm that the UE transmits an UE CAPABILITY INFORMATION message after it receives a UE CAPABILITY ENQUIRY message from the SS. To confirm that the UE indicates an invalid message reception when erroneous downlink UE CAPABILITY ENQUIRY and UE CAPABILITY INFORMATION CONFIRM messages are received. The UE shall transmit RRC STATUS message with the correct error cause value to SS.

8.1.5.4.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to the CELL_FACH state after a successful outgoing call attempt. The SS transmits an erroneous UE CAPABILITY ENQUIRY message containing invalid value in the IE "Capability update requirement". After receiving such a message, the UE shall report an error using RRC STATUS message with the appropriate error cause specified. Then SS transmits a UE CAPABILITY ENQUIRY message which includes the IE "Capability update requirement". The UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH, which includes the IE "UE radio access capability". The SS transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE to complete the UE capability enquiry procedure. Then SS initiates another UE capability enquiry procedure by transmitting the same UE CAPABILITY ENQUIRY message as in step 4. The UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH. When SS receives this message, it transmits an erroneous UE CAPABILITY INFORMATION CONFIRM message. The content of this message is lack of all IEs. The UE shall detect a protocol error and send RRC STATUS message to report this event. After receiving the RLC layer acknowledgement PDU for this message, the UE shall re-transmit UE CAPABILITY INFORMATION message on the uplink DCCH by the expiry of T304. SS completes this test by sending an error-free UE CAPABILITY INFORMATION CONFIRM message similar to the message sent in step 6.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state after an outgoing call has been established successfully.
2	←		UE CAPABILITY ENQUIRY	See specific message contents for this message
3	→		RRC STATUS	The IE "Protocol error cause" found in IE "Protocol error information" shall be set to "Information element value not comprehended"
4	←		UE CAPABILITY ENQUIRY	Use default message.
5	→		UE CAPABILITY INFORMATION	Use default message.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message.
7	←		UE CAPABILITY ENQUIRY	Same as in step 4.
8	→		UE CAPABILITY INFORMATION	The message content shall be the same as in step 5.
9	←		UE CAPABILITY INFORMATION CONFIRM	See specific message contents for this message
10	→		RRC STATUS	UE shall detect an error and then transmit this message on uplink DCCH.
11	→		UE CAPABILITY INFORMATION	UE shall re-transmit this message after T304's expiry.
12	←		UE CAPABILITY INFORMATION CONFIRM	SS sends an error-free message to acknowledge the receipt of the uplink message.

Specific Message Contents

UE CAPABILITY ENQUIRY (Step 2)

Information Element	Value/remark
Capability update requirement	
- UE radio access FDD capability update requirement	TRUE
- UE radio accessTDD capability update requirement	FALSE
- System specific capability update requirement list	
- System specific capability update requirement	invalid value

RRC STATUS (Step 3)

Information Element	Value/remark
Identification of received messag type - Received message type - RRC transaction identifier Protocol Error Information - Protocol Error Cause	 Checked to see if set to "UE CAPABILITY ENQUIRY" Checked to see if set to the same value in the UE CAPABILITY ENQUIRY message Checked to see if set to "Information element not comprehended"

UE CAPABILITY INFORMATION CONFIRM (Step 9)

Information Element	Value/remark
All IEs	Not Present

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 Checked to see if set to "ASN.1 violation or encoding error"

8.1.5.4.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH, reporting the error with protocol error cause set to "Information element value not comprehended".

After step 4 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH to respond to the downlink UE CAPABILITY ENQUIRY message.

After step 9, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 10, the UE shall re-transmit the UE CAPABILITY INFORMATION message with a similar content as in step 8.

8.1.5.5 UE Capability in CELL_FACH state: Success after T304 timeout

8.1.5.5.1 Definition

8.1.5.5.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network(s) supported by the UE. UTRAN initiates this action when it needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. After the UE receives a UE CAPABILITY ENQUIRY message, it transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. If it fails to receive a UE CAPABILITY INFORMATION CONFIRM message, the UE re-transmits another UE CAPABILITY INFORMATION message until its internal counter V304 is greater than N304.

Reference

3GPP TS 25.331 clauses 8.1.6 and 7.

8.1.5.5.3 Test purpose

To confirm that the UE re-transmits a UE CAPABILITY INFORMATION message until V304 is greater than N304, after the expiry of timer T304 when it fail to receive a downlink UE CAPABILITY INFORMATION CONFIRM message in response to the uplink UE CAPABILITY INFORMATION message sent.

8.1.5.5.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_FACH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the IE "Capability update requirement", the UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH that contains the IE "UE radio access capability". The SS waits and does not transmit a UE CAPABILITY INFORMATION CONFIRM message to the UE, resulting in the T304 timer to expire. SS shall observe that the UE attempts to transmit a UE CAPABILITY INFORMATION message again. The UE shall re-transmit N304 times, and SS transmits a UE CAPABILITY INFORMATION CONFIRM message to answer the last request and completes this test procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state. SS sets internal counter K =0
2	←		UE CAPABILITY ENQUIRY	Including the IE "Capability update requirement".
3	→		UE CAPABILITY INFORMATION	Including the IE "UE radio access".
4				If K equals N304,then proceeds to step 6. Else, continue with step 5.
5				The SS does not transmit a response and wait for T304 timer to expire. K=K+1 and goes to step 3.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message contents

Specific Message Contents

None

8.1.5.5.5 Test requirement

After step 3 the UE shall re-transmit a UE CAPABILITY INFORMATION message on the uplink DCCH, after each expiry of timer T304. The UE CAPABILITY INFORMATION message shall contain IE "UE radio access capability" with the value matching those stated in the ICS/IXIT statements. After (N304) re-transmissions, the UE shall receive a UE CAPABILITY INFORMATION CONFIRM message.

8.1.6 Direct Transfer

8.1.6.1 Direct Transfer in CELL DCH state (invalid message reception and no signalling connection exists)

8.1.6.1.1 Definition

8.1.6.1.2 Conformance requirement

The UE shall transmit an RRC STATUS message stating the reason "protocol error" in IE "failure cause" and also set value "ASN.1 violation or encoding error" in IE "Protocol error cause" when the UE receives a DOWNLINK DIRECT TRANFER message, which does not include the IE "NAS message". The UE shall transmit an RRC STATUS message including the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state" when the UE receives a DOWNLINK DIRECT TRANSFER message, with invalid IE"CN domain identity".

Reference

3GPP TS 25.331 clause 8.1.9.

8.1.6.1.3 Test purpose

To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which does not include the IE "NAS message" To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which include invalid IE "CN domain identity".

8.1.6.1.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the CELL_DCH state. The SS transmits an invalid DOWNLINK DIRECT TRANSFER message to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC, setting the value "protocol error" in IE "failure cause". The error type "ASN.1 violation or encoding error" shall also be indicated in IE "Protocol error cause". The SS transmits a DOWNLINK DIRECT TRANSFER message that contains invalid IE "CN domain identity" to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC, setting the value "protocol error" in IE "failure cause". The error type "Message not compatible with receiver state" shall also be indicated in IE "Protocol error cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		DOWNLINK DIRECT TRANSFER	Only message type is provided.
2	→		RRC STATUS	
3	←		DOWNLINK DIRECT TRANSFER	
4	→		RRC STATUS	

Specific Message Contents

DOWNLINK DIRECT TRANSFER (Step 1)

The contents of DOWNLINK DIRECT TRANSFER message in this test case is identical to those in default contents of layer 3 messages for RRC tests with the following exceptions.

Information Element	Value/remark
NAS message	Not Present

RRC STATUS (Step 2)

Information Element	Value/remark
Message Type	
Protocol error information	ASN.1 violation or encoding error
Other information element	Not checked

DOWNLINK DIRECT TRANSFER (Step 3)

Information Element	Value/remark
CN domain identity NAS message	CS domain or PS domain as unselected domain Arbitrary message.

RRC STATUS (Step 4)

Information Element	Value/remark
Message Type Protocol error information Other information element	 Message not compatible with receiver state Not checked

8.1.6.1.5 Test requirement

After step 1 the UE shall transmit an RRC STATUS message on the DCCH using AM RLC setting "protocol error" in IE "failure cause" and setting "ASN.1 violation or encoding error" in IE "Protocol error cause".

After step 3 the UE shall transmit a n RRC STATUS message on the DCCH using AM RLC setting "protocol error" in IE "failure cause" and setting "Message not compatible with receiver state" in IE "Protocol error cause".

8.1.6.2 Direct Transfer in CELL FACH state (invalid message reception and no signalling connection exists)

8.1.6.2.1 Definition

8.1.6.2.2 Conformance requirement

The UE shall transmit an RRC STATUS message stating the reason "protocol error" in IE "failure cause" and also set value "ASN.1 violation or encoding error" in IE "Protocol error cause" when the UE receives a DOWNLINK DIRECT TRANSFER message, which does not include the IE "NAS message". The UE shall transmit an RRC STATUS message including the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state" when the UE receives a DOWNLINK DIRECT TRANSFER message, with invalid IE "CN domain identity".

Reference

3GPP TS 25.331 clause 8.1.9.

8.1.6.2.3 Test purpose

To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which does not include the IE "NAS message". To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which include invalid IE "CN domain identity".

8.1.6.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH (state 6-11) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a DOWNLINK DIRECT TRANSFER message to the UEand does not include the IE "NAS message". The UE shall transmit an RRC STATUS message on the DCCH using AM RLC, setting the value "protocol error" in IE "failure cause". The error type "ASN.1 violation or encoding error" shall also be indicated in IE "Protocol error cause". The SS transmits a DOWNLINK DIRECT TRANSFER message that contain invalid IE "CN domain identity" to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC, setting the value "protocol error" in IE "failure cause". The error type "Message not compatible with receiver state" shall also be indicated in IE "Protocol error cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	DOWNLINK DIRECT TRANSFER	Only message type is provided
2		→	RRC STATUS	
3		←	DOWNLINK DIRECT TRANSFER	
4		→	RRC STATUS	

Specific Message Contents

DOWNLINK DIRECT TRANSFER (Step 1)

The contents of DOWNLINK DIRECT TRANSFER message in this test case is identical to those in default contents of layer 3 messages for RRC tests with the following exceptions.

Information Element	Value/remark
NAS message	Not Present

RRC STATUS (Step 2)

Information Element	Value/remark
Message Type	
Protocol error information	ASN.1 violation or encoding error
Other information element	Not checked

DOWNLINK DIRECT TRANSFER (Step 3)

Information Element	Value/remark
CN domain identity NAS message	CS domain or PS domain as unselected domain Arbitrary message.

RRC STATUS (Step 4)

Information Element	Value/remark
Message Type	
Protocol error information	Message not compatible with receiver state
Other information element	Not checked

8.1.6.2.5 Test requirement

After step 1 the UE shall transmit an RRC STATUS message on the DCCH using AM RLC setting "protocol error" in IE "failure cause" and setting "ASN.1 violation or encoding error" in IE "Protocol error cause".

After step 3 the UE shall transmit a n RRC STATUS message on the DCCH using AM RLC setting "protocol error" in IE "failure cause" and setting "Message not compatible with receiver state" in IE "Protocol error cause".

8.1.7 Security mode command

8.1.7.1 Security mode command in CELL_DCH state

8.1.7.1.1 Definition

8.1.7.1.2 Conformance requirement

1. This procedure is used to trigger the stop or start of ciphering or to command the restart of ciphering with the new ciphering configuration. It is also used to start integrity protection or modify integrity protection configuration, both for the signalling links and any of radio bearers.

2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates the downlink activation time and new integrity protection configuration, the UE shall apply the old ciphering configuration before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.

3. After the UE transmit the SECURITY MODE COMPLETE message using the new integrity protection configuration which includes uplink activation time, it starts to cipher transmission in the uplink using the new configuration at the uplink activation time.

Reference

3GPP TS 25.331 clause 8.1.12.

8.1.7.1.3 Test purpose

To confirm that the UE correctly communicates to the UTRAN and activates the new ciphering configurations after the stated activation time. To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that UE send SECURITY MODE FAILURE message when SS transmits incompatible simultaneous SECURITY MODE COMMAND messages to UE. To confirm that UE send SECURITY

MODE FAILURE message when SS transmits SECURITY MODE COMMAND message that causes invalid configuration.

8.1.7.1.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the RRC connected state CELL_DCH. The SS transmits a SECURITY MODE COMMAND message in which ciphering is requested to be activated, but the IE "Ciphering algorithm capability" is set to an unknown value. The UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Then SS transmits a SECURITY MODE COMMAND message without IE "Ciphering mode info" and IE "Integrity protection mode info". Again the UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, SS transmits a valid SECURITY MODE COMMAND message which includes the "Downlink activation time" IE for RB2 and "Integrity check info" IE. Following that, SS immediately transmit another valid SECURITY MODE COMMAND message to UE. Then the UE shall check the integrity check info and shall start to configure ciphering in downlink according to the first valid SECURITY MODE COMMAND message. Upon the reception of the subsequent SECURITY MODE COMMAND message, the UE shall transmit SECURITY MODE FAILURE message to SS with IE "failure cause" set to "incompatible simultaneous reconfiguration". Then UE shall transmit a SECURITY MODE COMPLETE message which contains the uplink activation time for RB2 and also "Integrity check info" IE using the new integrity protection configuration. SS records the uplink ciphering activation time for RB 2. Next, SS transmits UE CAPABILITY ENQUIRY message repeated on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a UE CAPABILITY INFORMATION message on the uplink DCCH using RLC-AM. SS then send UE CAPABILITY INFORMATION CONFIRM message to UE. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 has elapsed. SS checks all uplink UE CAPABILITY ENQUIRY messages are integrity-protected by UIA algorithm, and that the messages contain the correct values for "Integrity mode info" IE. This can be verified in SS through the reception of a correctly ciphered and integrity-protected UE CAPABILITY INFORMATION message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				RRC connected state on DCH_state.
2	←		SECURITY MODE COMMAND	See message content.
3	→		SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Protocol Error" and IE "Protocol Error Information" shall be set to "Information element value not comprehended".
4	←		SECURITY MODE COMMAND	IE "Ciphering mode info" and IE "Integrity mode info" are set to "Not Present"
5	→		SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "invalid configuration".
6	←		SECURITY MODE COMMAND	See specific message contents.
7	←		SECURITY MODE COMMAND	See specific message contents.
8	→		SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Incompatible simultaneous reconfiguration" .
9	→		SECURITY MODE COMPLETE	SS verifies that this message is sent unciphered. SS records the uplink ciphering activation time for RB 2.
10	←		UE CAPABILITY ENQUIRY	SS repeats step 8,9 and 10 until its internal uplink and downlink RLC SN have both surpassed the uplink and downlink ciphering activation time specified for RB2. This message is sent on the downlink DCCH using RLC-AM. See specific message content.
11	→		UE CAPABILITY INFORMATION	UE shall send this message on the uplink DCCH using RLC-AM. See specific message content. SS verifies that the last UE CAPABILITY INFORMATION message is both integrity-protected and ciphered correctly.
12	←		UE CAPABILITY INFORMATION CONFIRM	
				Step 10 to 12 is repeated for at least one cycle.

Specific Message Contents

SECURITY MODE COMMAND (Step 2)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	"1111111111111111"B
Integrity protection algorithm capability	"1111111111111111"B
Ciphering mode info	
Ciphering mode command	Start
Ciphering algorithm	Use one of the supported ciphering algorithms
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	2
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	
Integrity protection mode command	Start
Downlink integrity protection activation info	Not Present
Integrity protection algorithm	If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms
Integrity protection initialisation number	0000 0000 0000 0000 H (FRESH)
CN domain identity	Supported domain

SECURITY MODE FAILURE (Step 3)

The same message found in Annex A shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause	
Failure cause	Protocol error
Protocol error information	
Protocol error cause	Information element value not comprehended

SECURITY MODE COMMAND (Step 4)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	
UEA0	FALSE
UEA1	TRUE
Spare	FALSE
Integrity protection algorithm capability	
UIA1	TRUE
Spare	FALSE
Ciphering mode info	Not Present
Integrity protection mode info	Not Present
CN domain identity	Supported domain

SECURITY MODE FAILURE (Step 5)

The same message found in Annex A shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause Failure cause	 Invalid configuration

SECURITY MODE COMMAND (Step 6 and 7)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	
UEA0	If ciphering is not indicated to be active on IXIT statements in TS 34.123-2, set this to TRUE. If ciphering is indicated to be active on IXIT statements in TS 34.123-2, set this to TRUE.
UEA1	FALSE
Spare	TRUE
Integrity protection algorithm capability	FALSE
UIA1	
Spare	Start/restart
Ciphering mode info	Use one of the supported ciphering algorithms
Ciphering mode command	Not Present
Ciphering algorithm	
Activation time for DPCH	2
Radio bearer downlink ciphering activation time info	Current RLC SN + Y
RB Identity	
RLC sequence number	Start
Integrity protection mode info	Not Present
Integrity protection mode command	If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms
Downlink integrity protection activation info	0000 0000 0000 0000 H (FRESH)
Integrity protection algorithm	Supported domain
Integrity protection initialisation number	
CN domain identity	

SECURITY MODE FAILURE (Step 8)

The same message found in Annex A shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause Failure cause	 Incompatible simultaneous reconfiguration

SECURITY MODE COMPLETE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
- Message Authentication code	Checked to see if present
- RRC Message sequence number	Checked to see if present
Uplink integrity protection activation info	
- RRC message sequence number list	Check to see if it the RRC SN for RB 0 to RB 4 are present
Radio bearer uplink ciphering activation info	
- RB Identity	2
- RLC sequence number	SS records this value. See step 8 in 'expected sequence'

UE CAPABILITY REQUIRY (Step 10)

The contents of UE CAPABILITY REQUIRY message in this test case is identical to the message sub-type title found in annex A.

UE CAPABILITY INFORMATION (Step 11)

The contents of UE CAPABILITY INFORMATION message in this test case is identical to the message sub-type title found in annex A.

UE CAPABILITY INFORMATION CONFIRM(Step 12)

The contents of UE CAPABILITY INFORMATION CONFIRM message in this test case is identical to the message sub-type title found in annex A.

NOTE: Y = 2 * (size of COUNTER CHECK message, after PER encoding). The unit of Y is the number of RLC-AM PDU.

8.1.7.1.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message. The UE shall be able to communicate normally with the SS, with all control data on the signalling radio bearers unciphered.

After step 7, UE shall transmit SECURITY MODE FAILURE to SS to indicate an error due to incompatible simultaneous reconfiguration.

After step 8 the UE shall RLC-acknowledge the receipt of the first valid SECRUITY MODE COMMAND message using unciphered mode and which includes calculated integrity check info. SS checks that the SECURITY MODE COMPLETE message is received unciphered and that the calculated "integrity check info" IE is correct.

After step 9 SS verifies that all uplink signalling messages on RB1, RB2, RB3 and RB4 are integrity protected with UIA1 algorithm.

After uplink ciphering activation time has lapsed, SS verifies that the UE CAPABILITY INFORMATION message received is integrity protected with UIA algorithm and ciphered with the algorithm indicated in the second SECURITY MODE COMMAND (Step 4) message.

After downlink ciphering activation time has lapsed, UE CAPABILITY INFORMATION message received that is integrity protected with UIA algorithm and ciphered with the algorithm indicated in the second SECURITY MODE COMMAND (Step 4) message shall be transmitted. UE shall transmit the UE CAPABILITY INFORMATION message.

8.1.7.2 Security mode command in CELL_FACH state

8.1.7.2.1 Definition

8.1.7.2.2 Conformance requirement

1. This procedure is used to trigger the stop or start of ciphering, or to command the restart of ciphering with the new ciphering configuration. It is also used to start integrity protection or modify integrity protection configuration, both for signalling link(s) and any radio access bearer(s).
2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates the downlink activation time and new integrity protection configuration, the UE shall apply the old ciphering configuration before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.
3. The UE shall transmit SECURITY MODE COMPLETE message using the new integrity protection configuration stated in the received SECURITY MODE COMMAND message. The SECURITY MODE COMPLETE message shall include the ciphering uplink activation time. The UE shall start to apply the new ciphering configuration on the uplink direction, after the uplink activation time has elapsed.

Reference

3GPP TS 25.331 clause 8.1.12.

8.1.7.2.3 Test purpose

To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that the UE applies the old ciphering configuration in the downlink prior to the activation time; and uses the new ciphering configuration on and after the activation time. To confirm that the UE starts to cipher its uplink transmissions after the uplink activation time stated in SECURITY MODE COMPLETE message is reached. To confirm that UE aborts ciphering and integrity protection configuration when it reselect to a new cell and performs cell update procedure.

8.1.7.2.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, with the downlink transmission power shown in column marked "T0" in Table 8.1.7.2, while cell 2 is inactive.

UE: CELL_FACH (state 6-11) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

The UE is in the CELL_FACH state, camping onto cell 1. SS starts to broadcast BCCH on the primary CCPCH in cell 2. The UE shall find cell 2 to be more suitable for service and hence perform a cell reselection. After the completion of cell reselection, the UE shall transmits a CELL UPDATE message to the SS on the uplink CCCH of cell 2 and set IE "Cell update cause" to "Cell Reselection". After the SS receives this message, it transmits a CELL UPDATE.

Test Procedure

Table 8.1.7.2

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-73	-79	switched off	-73

Table 8.1.7.2 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" is to be applied subsequently.

The UE is in the RRC connected state CELL_FACH camping onto cell 1. The SS transmits a SECURITY MODE COMMAND message in which ciphering is requested to be activated, but the IE "Ciphering algorithm capability" is set to an unknown value. The UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, SS transmits a valid SECURITY MODE COMMAND message which includes IE "Downlink activation time" for RB2 and IE "Integrity check info". The UE shall check the integrity check info. It shall start to configure ciphering in downlink. Then SS configures its downlink transmission power settings according to columns "T1" in Table 8.1.7.2. UE shall abort ongoing integrity and ciphering reconfiguration. UE shall re-select to cell 2 and transmit CELL UPDATE message to SS with IE "cell update cause" set to "cell reselection". Then SS transmit a CELL UPDATE CONFIRM message to UE. UE shall not responds to this message. SS then transmits a SECURITY MODE COMMAND message to UE. The UE shall check the integrity check info. It shall start to configure ciphering in downlink and transmit a SECURITY MODE COMPLETE message, which contains the uplink activation time for RB2 using the new integrity protection configuration.. This message shall contain the IE "Integrity check info". SS records the uplink ciphering activation time for RB 2. Next, SS transmits UE CAPABILITY ENQUIRY message repeated on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a UE CAPABILITY INFORMATION message on the uplink DCCH using RLC-AM. SS confirms that the uplink UE CAPABILITY INFORMATION messages are not ciphered. SS also checks all uplink messages are integrity-protected by UIA1 algorithm, and that the messages contain the correct values for "Integrity mode info" IE. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 have elapsed. After both the uplink and downlink ciphering activation time for RB 2 have passed, the UE shall be able to communicate with the SS using the new ciphering configurations. This can be verified in SS through the reception of a correctly ciphered and integrity-protected UE CAPABILITY INFORMATION message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_FACH state.
2	←		SECURITY MODE COMMAND	See message content
3	→		SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Protocol Error" and IE "Protocol Error Information" shall be set to "Information element value not comprehended".
4	←		SECURITY MODE COMMAND	See specific message contents.
5				SS configures the downlink power transmission setting according to column "T1" in Table 8.1.7.2.
6	→		CELL UPDATE	UE re-selects to cell 2 and sends this message.
7	←		CELL UPDATE CONFIRM	
8	←		SECURITY MODE COMMAND	See specific message contents.
9	→		SECURITY MODE COMPLETE	SS verifies that this message is sent unciphered. SS records the uplink ciphering activation time for RB 2.
10	←		UE CAPABILITY ENQUIRY	SS repeats step 10, 11 and 12 until its internal uplink and downlink RLC sequence numbers have both surpassed the uplink and downlink ciphering activation times specified for RB2. This message is sent on the downlink DCCH using RLC-AM. See specific message content.
11	→		UE CAPABILITY INFORMATION	UE shall send this message on the uplink DCCH using RLC-AM. See specific message content. SS verifies that the last COUNTER CHECK RESPONSE message is both integrity-protected and ciphered correctly.
12	←		UE CAPABILITY INFORMATION	SS verifies that the last COUNTER CHECK RESPONSE message is both integrity-protected and ciphered correctly.

Specific Message Contents

SECURITY MODE COMMAND (Step 2)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	"1111111111111111"B "1111111111111111"B
Integrity protection algorithm capability	
Ciphering mode info	
Ciphering mode command	Start
Ciphering algorithm	Use one of the supported ciphering algorithms
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	2
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	
Integrity protection mode command	Start
Downlink integrity protection activation info	Not Present
Integrity protection algorithm	If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms
Integrity protection initialisation number	0000 0000 0000 0000 H (FRESH)
CN domain identity	Supported domain

SECURITY MODE COMMAND (Step 4 and 8)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	
	If ciphering is not indicated to be active on IXIT statements in TS 34.123-2, set this to TRUE.
UEA0	If ciphering is indicated to be active on IXIT statements in TS 34.123-2, set this to TRUE.
UEA1	FALSE
Spare	TRUE
Integrity protection algorithm capability	FALSE
UIA1	
Spare	Start/restart
Ciphering mode info	Use one of the supported ciphering algorithms
Ciphering mode command	Not Present
Ciphering algorithm	
Activation time for DPCH	2
Radio bearer downlink ciphering activation time info	Current RLC SN + Y
RB Identity	
RLC sequence number	Start
Integrity protection mode info	Not Present
Integrity protection mode command	If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms
Downlink integrity protection activation info	0000 0000 0000 0000 H (FRESH)
Integrity protection algorithm	Supported domain
Integrity protection initialisation number	
CN domain identity	

CELL UPDATE

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'.
Cell Update Cause	Check to see if set to 'Cell Reselection'

CELL UPDATE CONFIRM (Step 4 and 18)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_FACH

SECURITY MODE COMPLETE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
- Message Authentication code	Checked to see if present
- RRC Message sequence number	Checked to see if present
Uplink integrity protection activation info	
- RRC message sequence number list	Check to see if it the RRC SN for RB 0 to RB 4 are present
Radio bearer uplink ciphering activation info	
- RB Identity	2
- RLC sequence number	SS records this value. See step 8 in 'expected sequence'

UE CAPABILITY REQUIRY (Step 10)

The contents of UE CAPABILITY REQUIRY message in this test case is identical to the message sub-type title found in Annex A.

UE CAPABILITY INFORMATION (Step 11)

The contents of UE CAPABILITY INFORMATION message in this test case is identical to the message sub-type title found in Annex A.

UE CAPABILITY INFORMATION CONFIRM(Step 12)

The contents of UE CAPABILITY INFORMATION CONFIRM message in this test case is identical to the message sub-type title found in Annex A.

NOTE: Y = 2 * (size of COUNTER CHECK message, after PER encoding). The unit of Y is the number of RLC-AM PDU.

8.1.7.2.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message. The UE shall be able to communicate normally with the SS, with all control data on the signalling radio bearers unciphered.

After step 5, UE shall reselect to cell 2 and transmit CELL UPDATE message to SS with IE "cell update cause" set to "cell reselection".

After step 8 the UE shall RLC-acknowledge the receipt of the SECRUITY MODE COMMAND message using unciphered mode and which includes calculated integrity check info. SS checks that the SECURITY

MODE COMPLETE message is received unciphered and that the calculated MAC-I values in "integrity check info" IE is correct.

After step 9 SS verifies that all uplink signalling messages on RB1, RB2, RB3 and RB4 are integrity protected with UIA1 algorithm.

After step 11 SS verifies that the last UE CAPABILITY INFORMATION message received is integrity protected with UIA1 algorithm and ciphered with the algorithm indicated in the second SECURITY MODE COMMAND (Step 4) message.

8.1.8 Counter check

8.1.8.1 Counter check in CELL_DCH state

8.1.8.1.1 Definition

8.1.8.1.2 Conformance requirement

When the UE receives a COUNTER CHECK message that includes matched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and omitting "RB COUNT-C information" IE in this message.

When the UE receives a COUNTER CHECK message that includes any mismatched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and specifies the current COUNT-C information of the RAB(s) with mismatched values.

Reference

3GPP TS 25.331 clause 8.1.15.

8.1.8.1.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message after it receives a COUNTER CHECK message from the SS. To confirm that the UE responds to the reception of an invalid downlink COUNTER CHECK message by transmitting a RRC STATUS message on the uplink DCCH, stating the correct error cause value in message.

8.1.8.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to the CELL_DCH state after a successful outgoing call attempt. The SS transmits an erroneous COUNTER CHECK message. The content of this message is lack of a mandatory IE. The UE shall detect a protocol error and send RRC STATUS message to report this event. Next, the SS transmits a COUNTER CHECK message that includes the current COUNT-C MSB information in each radio access bearer. The UE shall react by sending a COUNTER CHECK RESPONSE message on the uplink DCCH, which does not include "RB COUNT-C information" IE. The SS transmits a COUNTER CHECK message which includes the current COUNT-C MSB information reversed all the bits in each radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established. The SS transmits a COUNTER CHECK

message which includes a different radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2	←		COUNTER CHECK	See specific message contents for this message
3	→		RRC STATUS	UE shall detect a protocol error and then transmit this message.
4	←		COUNTER CHECK	See specific message content.
5	→		COUNTER CHECK RESPONSE	The message shall not include the IE "RB COUNT-C information".
6	←		COUNTER CHECK	See specific message content.
7	→		COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".
8	←		COUNTER CHECK	See specific message content.
9	→		COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".

Specific Message Contents

COUNTER CHECK (Step 2)

Information Element	Value/remark
RRC transaction identifier	Not Present

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 Checked to see if set to "ASN.1 violation or encoding error"

COUNTER CHECK (Step 4)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Current COUNT-C MSB for RB#20 in uplink
- COUNT-C MSB downlink	Current COUNT-C MSB for RB#20 in downlink

COUNTER CHECK RESPONSE (Step 5)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	Check to if this IE is absent

COUNTER CHECK (Step 6)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 20
- COUNT-C MSB uplink	Toggle all bits of the current COUNT-C MSB in uplink for RB#20
- COUNT-C MSB downlink	Toggle all bits of the current COUNT-C MSB in downlink for RB#20

COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink

COUNTER CHECK (Step 8)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 25
- COUNT-C MSB uplink	Arbitrary COUNT-C MSB in uplink for RB#25
- COUNT-C MSB downlink	Arbitrary COUNT-C MSB in downlink for RB#25

COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink
- RB identity	Check to see if set to 25
- COUNT-C uplink	Check to see if COUNT-C MSB is set to COUNT-C MSG in uplink for RB#25 in step 8 and LSB is fill with '0'
- COUNT-C downlink	Check to see if COUNT-C MSB is set to COUNT-C MSG in downlink for RB#25 in step 8 and LSB is fill with '0'

8.1.8.1.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 4 the UE shall transmit a COUNTER CHECK RESPONSE message which does not includes the IE "RB COUNT-C information" to indicates that a matched comparison result is obtained.

After step 6, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that a mismatch in COUNT-C value is detected in RB#20.

After step 8, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that RB#25 is not found in variable ESTABLISHED_RABS and RB#20 is not found in IE "RB COUNT-C MSB information".

8.1.8.2 Counter check in CELL_FACH state

8.1.8.2.1 Definition

8.1.8.2.2 Conformance requirement

When the UE receives a COUNTER CHECK message that includes matched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and omitting "RB COUNT-C information" IE in this message.

When the UE receives a COUNTER CHECK message that includes any mismatched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and specifies the current COUNT-C information of the RAB(s) with mismatched values.

Reference

3GPP TS 25.331 clause 8.1.15.

8.1.8.2.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message after it receives a COUNTER CHECK message from the SS. To confirm that the UE responds to the reception of an invalid downlink COUNTER CHECK message by transmitting a RRC STATUS message on the uplink DCCH, stating the correct error cause value in message.

8.1.8.2.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to the CELL_FACH state after a successful outgoing call attempt. The SS transmits an erroneous COUNTER CHECK message. The content of this message is lack of a mandatory IE. The UE shall detect a protocol error and send RRC STATUS message to report this event. Next, the SS transmits a COUNTER CHECK message that includes the current COUNT-C MSB information in each radio access bearer. The UE shall react by sending a COUNTER CHECK RESPONSE message on the uplink DCCH, which does not include "RB COUNT-C information" IE. The SS transmits a COUNTER CHECK message, which includes the current COUNT-C MSB information for each radio bearer but with all the bits reversed. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state after an outgoing call has been established successfully.
2	←		COUNTER CHECK	See specific message contents for this message
3	→		RRC STATUS	UE shall detect a protocol error and then transmit this message.
4	←		COUNTER CHECK	See specific message content.
5	→		COUNTER CHECK RESPONSE	The message shall not include the IE "RB COUNT-C information".
6	←		COUNTER CHECK	See specific message content.
7	→		COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".
8	←		COUNTER CHECK	See specific message content.
9	→		COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".

Specific Message Contents

COUNTER CHECK (Step 2)

Information Element	Value/remark
RRC transaction identifier	Not Present

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol Error Information	
- Protocol Error Cause	Checked to see if set to "ASN.1 violation or encoding"

COUNTER CHECK (Step 4)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Current COUNT-C MSB for RB#20 in uplink
- COUNT-C MSB downlink	Current COUNT-C MSB for RB#20 in downlink

COUNTER CHECK RESPONSE (Step 5)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	Check to if this IE is absent

COUNTER CHECK (Step 6)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Toggle all bits of the current COUNT-C MSB in uplink for RB#20
- COUNT-C MSB downlink	Toggle all bits of the current COUNT-C MSB in downlink for RB#20

COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink

COUNTER CHECK (Step 8)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 25
- COUNT-C MSB uplink	Arbitrary COUNT-C MSB in uplink for RB#25
- COUNT-C MSB downlink	Arbitrary COUNT-C MSB in downlink for RB#25

COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink
- RB identity	Check to see if set to 25
- COUNT-C uplink	Check to see if COUNT-C MSB is set to COUNT-C MSG in uplink for RB#25 in step 8 and LSB is fill with '0'
- COUNT-C downlink	Check to see if COUNT-C MSB is set to COUNT-C MSG in downlink for RB#25 in step 8 and LSB is fill with '0'

8.1.8.2.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 4 the UE shall transmit a COUNTER CHECK RESPONSE message which does not includes the IE "RB COUNT-C information" to indicates that a matched comparison result is obtained.

After step 6, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that a mismatch in COUNT-C value is detected in RB#20.

After step 8, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that RB#25 is not found in variable ESTABLISHED_RABS and RB#20 is not found in IE "RB COUNT-C MSB information".

8.1.9 Signalling Connection Release Request

8.1.9.1 Definition

8.1.9.2 Conformance requirement

The UE shall initiate the signalling connection release procedure when the higher layer entities in the UE request to release one or more signalling session (one example of such case is location update failure). In this case, the UE shall transmit a SIGNALLING CONNECTION RELEASE REQUEST message, which includes the CN domain identity of the connection flow to be released.

Reference

3GPP TS 25.331 clause 8.1.14.

8.1.9.3 Test purpose

To confirm that the UE transmits a SIGNALLING CONNECTION RELEASE REQUEST message after it fails to receive a response for the LOCATION UPDATING REQUEST message.

8.1.9.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: Switched off (state 1) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is turned on and it shall find a suitable cell to camp on. The UE shall initiate a location updating procedure. The UE shall establish an RRC connection and transmits a LOCATION UPDATING REQUEST message using the INITIAL DIRECT TRANSFER message. The SS does not respond to this message, and the UE shall send a SIGNALLING CONNECTION RELEASE REQUEST message which includes the CN domain identity with the same value as that in the INITIAL DIRECT TRANSFER message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is powered on.
2	→		RRC CONNECTION REQUEST	UE shall initiate the location updating procedure.
3	←		RRC CONNECTION SETUP	
4				The UE configures the layer 2 and layer 1.
5	→		RRC CONNECTION SETUP COMPLETE	
6	→		INITIAL DIRECT TRANSFER (LOCATION UPDATING REQUEST)	LOCATION UPDATE REQUEST is embedded in this message transmission.
7				The SS does not respond and waits until the timer for location update procedure expires.
8	→		SIGNALLING CONNECTION RELEASE REQUEST	

Specific Message Content

SIGNALLING CONNECTION RELEASE REQUEST (Step 8)

Information Element	Value/remark
CN domain identity	Check to see if this value is the as same as in the uplink INITIAL DIRECT TRANSFER message.

8.1.9.5 Test requirement

After step 1 the UE shall initiate the LOCATION UPDATING procedure and establish an RRC connection.

After step 7 the UE shall transmit a SIGNALLING CONNECTION RELEASE REQUEST message which includes the same CN domain identity as that found in the INITIAL DIRECT TRANSFER message.

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Cancún, México, 29th - 30th November 2001

Tdoc TSG T1-010421

CR-Form-v3

CHANGE REQUEST

⌘ **34.123-1** **CR** 128 ⌘ rev ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Default RRC message contents for 1.28 Mcps TDD
Source:	⌘	Siemens
Work item code:	⌘	LCRTDD
Date:	⌘	26.11.01
Category:	⌘	F
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	Introduces default RRC message contents for 1.28 Mcps TDD
Summary of change:	⌘	New annex proposed containing default RRC message contents for TDD. This annex has been labelled A1. Structure proposed: • Annex A (normative): Default RRC Message Contents • Annex A.1: Default RRC Message Contents (FDD) • Annex A.2: Default RRC Message Contents (3.84 Mcps TDD) • Annex A.3: Default RRC Message Contents (1.28 Mcps TDD)
Consequences if not approved:	⌘	Test procedures will not be defined for the TDD 1.28 Mcps option.

Clauses affected:	⌘	Annex
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications
	⌘	TS34.123-2
Other comments:	⌘	This CR affects Release 4

Annex A (normative): Default RRC Message Contents

Annex A.1: Default RRC Message Contents (FDD)

...

Annex A.2: Default RRC Message Contents (3.84 Mcps TDD)

[FFS]

Annex A.3: Default RRC Message Contents (1.28 Mcps TDD)

This clause contains the default values of RRC messages, other than those specified in TS 34.108 clauses 6 and 9. Unless indicated otherwise in specific test cases, they shall be transmitted by the system simulator in RRC messages, and which are required to be received from the UE under test.

The necessary L3 messages are listed in alphabetic order, with the exception of the SYSTEM INFORMATION messages, where it is the information elements which are listed in alphabetic order (this is because some information elements occur in several SYSTEM INFORMATION types).

In this clause, decimal values are normally used. However, sometimes a hexadecimal value, indicated by an "H", or a binary value, indicated by a "B" is used.

Default SYSTEM INFORMATION:

NOTE 1: SYSTEM INFORMATION BLOCK TYPE 1 (except for PLMN type “GSM-MAP”), SYSTEM INFORMATION BLOCK TYPE 8, SYSTEM INFORMATION BLOCK TYPE 9, SYSTEM INFORMATION BLOCK TYPE 10, SYSTEM INFORMATION BLOCK TYPE 14, SYSTEM INFORMATION BLOCK TYPE 15 and SYSTEM INFORMATION BLOCK TYPE 16 messages are not used.

Contents of CELL UPDATE message: TM

Information Element	Value/remark
Message Type	
U-RNTI	Checked to see if it is set to the following values
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Checked to see if it is absent
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
START List	Checked to see if the 'CN domain identity' and 'START' IEs are present for all CN domains supported by the UE
- CN domain identity	Checked to see if it is one of the supported CN domains
- START	Checked to see if it is present
AM_RLC error indication (RB2 or RB3)	Checked to see if it is set to 'FALSE'
AM_RLC error indication (RB>3)	Checked to see if it is set to 'FALSE'
Cell update cause	See the test content
Failure cause	Checked to see if it is absent
RB timer indicator	
- T314 expired	Checked to see if it is set to 'FALSE'
- T315 expired	Checked to see if it is set to 'FALSE'
Measured results on RACH	Not checked

Contents of CELL UPDATE CONFIRM message: UM

Information Element	Value/remark
Message Type	
U-RNTI	If this message is sent on CCCH, use the following values. Else, this IE is absent.
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Selects an arbitrary integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
Activation time	Not Present – use default value
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC State indicator	CELL_FACH
UTRAN DRX cycle length coefficient	Not Present
RLC re-establish indicator (RB2 or RB3)	FALSE
RLC re-establish indicator (RB>3)	FALSE
CN information info	Not Present
URA identity	0000 0000 0001B
RB information to release list	Not Present
RB information to reconfigure list	Not Present
RB information to be affected list	Not Present
Downlink counter synchronisation info	Not Present
UL Transport channel information common for all transport channels	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured TrCH information list	Not Present
CHOICE mode	TDD
DL Transport channel information common for all transport channels	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured TrCH information list	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE channel requirement	Not Present
CHOICE mode	TDD
Downlink information common for all radio links	Not Present
Downlink information per radio link list	Not Present

Contents of MEASUREMENT CONTROL message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an unused integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Measurement Reporting/Event Trigger Reporting Mode	Periodical reporting
Additional measurement list	Not Present
CHOICE Measurement type	Intra-frequency measurement
- Intra-frequency measurement	
- Intra-frequency cell info	
- New intra-frequency cell	
- Intra-frequency cell-id	0
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN number	FALSE
- CHOICE mode	TDD
- Primary CCPCH info	
-CHOICE mode	TDD
-CHOICE TDD option	1.28 Mcps TDD
-TSTD indicator	TRUE
-Cell parameters ID	4
-Block STTD indicator	TRUE
- Primary CCPCH TX power	Not Present
- Timeslot List	Not Present
- Intra-frequency measurement quantity	
- Filter coefficient	0
- CHOICE mode	TDD
- Measurement quantity list	
- Measurement quantity	Primary CCPCH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- CHOICE mode	TDD
- Timeslot ISCP reporting indicator	FALSE
- Proposed TGSN Reporting required	FALSE
- Primary CCPCH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- CHOICE mode	TDD
- Timeslot ISCP reporting indicator	FALSE
- Proposed TGSN Reporting required	FALSE
- Primary CCPCH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected set cells	Not Present
- Reporting cell status	
- CHOICE reported cell	Report cell within active set and/or monitored cells on

	used frequency .
- Maximum number of reported cells	2
- Measurement validity	Not Present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	64 sec
DPCH Compressed mode status info	Not Present

Contents of MEASUREMENT CONTROL FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it's set to the identical value for the same IE in the downlink MEASUREMENT CONTROL message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	See the test content

Contents of MEASUREMENT REPORT message: AM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Measurement identity	1
Measured Results	
- Intra-frequency measured results	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is absent
- Cell synchronisation information	Checked that this IE is absent
- CHOICE mode	Checked that this is TDD
- Cell parameters Id	4
- Proposed TGSN	Checked that this IE is absent
- Primary CCPCH RSCP	Checked that this IE is present.
- Pathloss	Checked that this IE is absent
- Timeslot list	Checked that this IE is absent
Measured results on RACH	Checked that this IE is absent
Additional measured results	Checked that this IE is absent
Event results	Checked that this IE is absent

Contents of PAGING TYPE 1 message: TM (SMS in CS)

Information Element	Value/remark
Message Type	
Paging record	
- CHOICE Used paging identity	CN identity
- Paging cause	Terminating Low Priority Signalling
- CN domain identity	CS domain
- CHOICE UE identity	
- IMSI (GSM-MAP)	Set to the same octet string as in the IMSI stored in the USIM card
BCCH modification info	Not Present

Contents of PAGING TYPE 1 message: TM (SMS in PS)

Information Element	Value/remark
Message Type	
Paging record	
- CHOICE Used paging identity	CN identity
- Paging cause	Terminating Low Priority Signalling
- CN domain identity	PS domain
- CHOICE UE identity	
- IMSI (GSM-MAP)	Set to the same octet string as in the IMSI stored in the USIM card
BCCH modification info	Not Present

Contents of PAGING TYPE 2 message: AM (Speech in CS)

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Paging cause	Terminating Conversational Call
CN domain identity	CS domain
Paging record type identifier	Select the same type as in the IE “Initial UE Identity” in RRC CONNECTION REQUEST” message.

Contents of PHYSICAL CHANNEL RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
URA identity		Not Present
Downlink counter synchronisation info		Not Present
Frequency info		
-CHOICE mode		TDD
- UARFCN(Nt)		Reference to TS34.108 clause 5.1 Parameter set.
Maximum allowed UL TX power		30dBm
CHOICE channel requirement		Uplink DPCH info
Uplink DPCH info	A1, A2, A3, A4	
- CHOICE mode		TDD
- Uplink DPCH power control info		
- UL Target SIR		Reference to TS34.108
- CHOICE UL OL PC info		Individually signalled
- CHOICE TDD option		1.28 Mcps TDD
- TPC step size		1 dB
- Primary CCPCH Tx Power		Reference to TS34.108
- CHOICE mode		TDD
- Uplink Timing Advance Control		Not Present
- UL CCTrCH List		
- TFCS ID		1
- Time info		
- Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Duration		infinite
- Common timeslot info		
- 2nd interleaving mode		Reference to TS34.108 clause 6 Parameter Set.
- TFCI coding		Reference to TS34.108 clause 6 Parameter Set.
- Puncturing Limit		Reference to TS34.108 clause 6 Parameter Set.
- Repetition Period		Reference to TS34.108 clause 6 Parameter Set.
- Repetition Length		Reference to TS34.108 clause 6 Parameter Set
- Uplink DPCH timeslots and codes		
- First timeslot information		
- CHOICE TDD option		1.28 Mcps
- Timeslot number		The number of an uplink timeslot that has unassigned codes.
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps

- Midamble Allocation Mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot code list		Repeated (1,2) for each channelisation code assigned in the slot to meet the needs of TS34.108 clause 6 Parameter Set.
- Channelisation Code		(i/SF) where i denotes an unassigned code matching the SF specified in TS34.108 clause 6 Parameter Set.
- CHOICE more timeslots		The presence of this IE depends on the number of resources specified in TS34.108 section 6 and the number of slots in which they are assigned.
CHOICE Mode		TDD
Downlink information common for all radio links	A1, A2, A3, A4	
- Downlink DPCH info common for all RL		
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
-CHOICE mode		TDD
-TPC Step Size		1
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps
- TSTD indicator		TRUE
- Default DPCH Offset Value		Not Present
Downlink information for each radio links		
- CHOICE mode		TDD
- Primary CCPCH info		
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps
- TSTD indicator		TRUE
- Cell parameters ID		0
- Block STTD indicator		FALSE
- Downlink DPCH info for each RL		
- CHOICE mode		TDD
- DL CCTrCH List		
- TFCS ID		1
- Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Duration		Infinite
- Common timeslot info		
- 2nd interleaving mode		Reference to TS34.108
- TFCI coding		TRUE
- Puncturing limit		Reference to TS34.108 clause 6 Parameter Set
- Repetition period		1
- Repetition length		Empty
- Downlink DPCH timeslots and codes		
- First Individual timeslot info		
- Individual timeslot info		
- Timeslot number		The number of an downlink timeslot that has unassigned codes.
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble allocation mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps TDD
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot channelisation codes		
- First channelisation code		(i/SF) where i is the lowest numbered code that is being assigned and SF is specified in TS34.108 clause 6 Parameter Set.
- Last channelisation code		(j/SF) where j is the highest numbered code that is being assigned in the slot.

- Bitmap		Bitmap of codes that are assigned in the slot.
- CHOICE more timeslots		The presence of this IE depends upon whether the requirements of TS34.108 Parameter Set can be met by the codes that have been assigned in the first timeslot.
- Secondary CCPCH info		Not Present
- References to system information blocks		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of PHYSICAL CHANNEL RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it’s set to identical value of the same IE in the downlink PHYSICAL CHANNEL RECONFIGURATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM, (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of RADIO BEARER SETUP message: AM or UM

Information Element	Condition	Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If ciphering is indicated to be active, this IE present with the values of the sub IEs as stated below. Else, this IE is omitted.
- Ciphering mode command		Start
- Ciphering algorithm		Use one of the supported ciphering algorithms
- Ciphering activation time for DPCH		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Radio bearer downlink ciphering activation time info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
URA identity		Not Present
Signalling RB information to setup		Not Present
RAB information for setup	A1	
- RAB info		
- RAB identity		0000 0001B
- CN domain identity		CS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		
- T314		20 seconds
- RB information to setup		
- RB identity		10
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
RAB information for setup	A2	
- RAB info		

- RAB identity		0000 0001B
- CN domain identity		CS domain
- NAS Synchronisation Indicator		Not Present
- Re-establishment timer		
- T314		20 seconds
- RB information to setup		
- RB identity		10
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
- RB information to setup		
- RB identity		11
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		2
- Logical channel identity		8
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		7
- Logical channel identity		8
- RB information to setup		(This IE is needed for 12.2 kbps and 10.2 kbps)
- RB identity		12
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		3
- Logical channel identity		9
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		

- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		8
- Logical channel identity		9
RAB information for setup	A3, A4	
- RAB info		
- RAB identity		0000 0001B
- CN domain identity		PS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		
- T314		20 seconds
- RB information to setup		
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		AM RLC
- Transmission RLC discard		
- SDU discard mode		Max DAT retransmissions
- MAX_DAT		4
- Timer_MRW		100
- MaxMRW		4
- Transmission window size		8
- Timer_RST		500
- Max_RST		4
- Polling info		
- Timer_poll_prohibit		200
- Timer_poll		200
- Poll_SDU		1
- Last transmission PDU poll		TRUE
- Last retransmission PDU poll		TRUE
- Poll_Windows		99
- CHOICE Downlink RLC mode		AM RLC
- In-sequence delivery		TRUE
- Receiving window size		8
- Downlink RLC status info		
- Timer_status_prohibit		200
- Timer_EPC		200
- Missing PDU indicator		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
RAB information for setup	A5, A6	
- RAB info		(AM DTCH for PS domain)
- RAB identity		0000 0001B
- CN domain identity		PS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		
- T314		20 seconds
- RB information to setup		
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		AM RLC
- Transmission RLC discard		
- CHOICE SDU discard mode		Max DAT retransmissions
- MAX_DAT		4
- Timer_MRW		100

- MaxMRW		4
- Transmission window size		8
- Timer_RST		500
- Max_RST		4
- Polling info		
- Timer_poll_prohibit		200
- Timer_poll		200
- Poll_SDU		1
- Last transmission PDU poll		TRUE
- Last retransmission PDU poll		TRUE
- Poll_Windows		99
- CHOICE Downlink RLC mode		AM RLC
- In-sequence delivery		TRUE
- Receiving window size		8
- Downlink RLC status info		
- Timer_status_prohibit		200
- Timer_EPC		200
- Missing PDU indicator		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		7
- CHOICE RLC size list		Explicit
- RLC size index		Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority		6
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH/PCH
- Logical channel identity		6
RB information to be affected	A1, A2, A3, A4	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		1
RB information to be affected	A1, A2, A3, A4	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		2
RB information to be affected	A1, A2, A3, A4	(AM DCCH for NAS_DT High priority)

- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		All
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		3
RB information to be affected	A1, A2, A3, A4	(AM DCCH for NAS_DT Low priority)
- RB identity		4
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		All
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		4
RB information to be affected	A5, A6	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		1
- CHOICE RLC size list		Explicit
- RLC size index		Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH/PCH
- Logical channel identity		1
RB information to be affected	A5, A6	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		2
- CHOICE RLC size list		Explicit
- RLC size index		Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH/PCH
- Logical channel identity		2
RB information to be affected	A5, A6	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		

- RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity		Not Present 1 RACH 3 Explicit Reference to TS34.108 clause 6 Parameter Set 4 1 FACH/PCH 3
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(AM DCCH for NAS_DT Low priority) 4 Not Present 1 RACH 4 Explicit Reference to TS34.108 clause 6 Parameter Set 5 1 FACH/PCH 4
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity - Downlink RLC logical channel info	A5, A6	(TM BCCH for RRC) 6 1 FACH/PCH 5 Not Present
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity - Downlink RLC logical channel info	A5 or A6	(TM PCCH for RRC) 7 1 FACH/PCH 1 Not Present
Downlink counter synchronisation info		Not Present
UL Transport channel information for all transport channels - PRACH TFCS - CHOICE mode - Individual UL CCTrCH information - TFCS ID - Shared Channel Indicator - UL TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information - TFC subset - CHOICE Subset representation - Allowed Transport Format combination list	A1, A2,A3, A4	 Not Present TDD 1 FALSE Normal Complete Refer to TS34.108 clause 6. Refer to TS34.108 clause 6 Parameter Set Allowed transport format combination list Refer to TS34.108 clause 6 Parameter Set
UL Transport channel information for all transport channels - TFC subset - Allowed Transport Format combination - PRACH TFCS	A5, A6	 (This IE is repeated for TFC number.) 0 to MaxTFCvalue-1 (MaxTFCValue is refer to TS34.108 clause 6 Parameter Set.) (This IE is repeated for TFC number.)

- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		
- TFCS complete reconfigure information		
- CHOICE TFCS Size		Number of used bits must be enough to cover all combinations of CTFC from clauses 6. Refer to TS34.108 clause 6 Parameter Set
- CTFC information		Not Present
- CHOICE mode		TDD
- Individual UL CCTrCH information		Not Present
Deleted UL TrCH information	A4	
- Uplink transport channel type		DCH
- Transport channel identity		15
Deleted UL TrCH information	A5	
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
Added or Reconfigured UL TrCH information	A1, A2, A3, A4	
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
Added or Reconfigured UL TrCH information	A1, A2, A3, A4	If TrCH reconfiguration is executed then this is needed (e.g. The rate of SRB for DCCH is changed.).
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter

		Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC size - Number of TBs and TTI List - Transmission Time Interval - Number of transport blocks - CHOICE Logical Channel List - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A2	 DCH 2 Dedicated transport channels (This IE is repeated for TFI number) Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set Not Present Reference to clause 6 Parameter Set All Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC size - Number of TBs and TTI List - Transmission Time Interval - Number of transport blocks - CHOICE Logical Channel List - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A2	(This IE is needed for 12.2 kbps and 10.2 kbps) DCH 3 (This IE is repeated for TFI number) Dedicated transport channels Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set Not Present Reference to clause 6 Parameter Set All Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set Reference to clause 6 Parameter Set
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE mode - Individual DL CCTrCH information - DL TFCS Identity - TFCS Id - Shared Channel Indicator - CHOICE DL parameters - DL DCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information	A1,A2,A3, A4	 Not Present TDD 1 FALSE Independent (This IE is repeated for TFC number.) Normal Complete Refer to TS34.108 clause 6. Refer to TS34.108 clause 6.
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE mode - IndividualDL CCTrCH information	A5, A6	 (This IE is repeated for TFC number.) Normal Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6. Refer to TS34.108 clause 6 Parameter Set Not Present TDD Not Present
Deleted DL TrCH information - Downlink transport channel type - Transport channel identity	A4	 DCH 12

- Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity		DCH 13 DCH 14
Deleted DL TrCH information - Downlink transport channel type - DL Transport channel identity - Downlink transport channel type - Transport channel identity	A5	 DCH 6 DCH 10
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH identity - DCH quality target - BLER Quality value - Transparent mode signalling info	A1,A2	 DCH 6 Same as UL DCH 1 -6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size - DCH quality target - BLER Quality value - Transparent mode signalling info	A1, A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.). DCH 10 Explicit Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6 Parameter Set ALL Reference to TS34.108 clause 6 Parameter Set Reference to TS34.108 clause 6 Parameter Set Reference to TS34.108 clause 6 Parameter Set Reference to TS34.108 clause 6 Parameter Set Reference to TS34.108 clause 6 Parameter Set -6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH identity	A2	 DCH 7 SameAsUL DCH 2
Added or Reconfigured DL TrCH information - Downlink transport channel type - Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH identity - DCH quality target - BLER Quality value - Transparent mode signalling info	A2	(This IE is needed for 12.2 kbps and 10.2 kbps) DCH 8 SameAsUL DCH 3 -6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters	A3, A4	 DCH 6 Explicit

- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Frequency info		
- CHOICE mode		TDD
- UARFCN (Nt)		Reference to TS34.108 clause 6 Parameter Set
Maximum allowed UL TX power		30dBm
CHOICE channel requirement	A1, A3, A4	Uplink DPCH info
- Uplink DPCH power control info		
- CHOICE mode		TDD
- UL Target SIR		Reference to TS34.108 Parameter set.
- CHOICE UL OL PC info		Individually signalled
- CHOICE TDD option		1.28 Mcps
- TPC step size		1 dB
- Primary CCPCH Tx Power		Not Present
- CHOICE mode		TDD
- Uplink Timing Advance Control		Not Present
- UL CCTrCH List		
- TFCS Id		1
- Time info		
- Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Duration		infinite
- Common timeslot info		
- 2nd interleaving mode		Reference to TS34.108 clause 6 Parameter Set.
- TFCI coding		Reference to TS34.108 clause 6 Parameter set.
- Puncturing Limit		Reference to TS34.108 clause 6 Parameter set.
- Repetition Period		Reference to TS34.108 clause 6 Parameter set.
- Repetition Length		Reference to TS34.108 clause 6 Parameter set.
- Uplink DPCH timeslots and code		
- First individual timeslot info		
- Timeslot number		The number of an uplink timeslot that has unassigned codes.
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble allocation mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps TDD
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot channelisation codes		Repeated (1,2) for each channelisation code

		assigned in the slot to meet the needs of TS34.108 clause 6 Parameter Set.
- Channelisation code		(i/SF) where i denotes an unassigned code matching the SF specified in TS34.108 clause 6 Parameter Set.
- CHOICE more timeslots		The presence of this IE depends upon the number of resources specified in TS34.108 section 6 and the number of slots in which they are being assigned.
CHOICE channel requirement	A2	Uplink DPCH info
- Uplink DPCH power control info		
- CHOICE mode		TDD
- UL Target SIR		Reference to TS34.108 Parameter set.
- CHOICE UL OL PC info		Individually signalled
- CHOICE TDD option		1.28 Mcps
- TPC step size		1 dB
- Primary CCPCH Tx Power		Not Present
- CHOICE mode		TDD
- Uplink Timing Advance Control		Not Present
- UL CCTrCH List		
- TFCS Id		1
- Time info		
- Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Duration		infinite
- Common timeslot info		
- 2nd interleaving mode		Reference to TS34.108 section 6 Parameter set.
- TFCI coding		Reference to TS34.108 section 6 Parameter set.
- Puncturing Limit		Reference to TS34.108 section 6 Parameter set.
- Repetition Period		Reference to TS34.108 clause 6 Parameter set.
- Repetition Length		Reference to TS34.108 clause 6 Parameter set.
- Uplink DPCH timeslots and code		
- First individual timeslot info		The number of an uplink timeslot that has unassigned codes.
- Timeslot number		
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble allocation mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps TDD
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot channelisation codes		Repeated (1,2) for each channelisation code assigned in the slot to meet the needs of TS34.108 clause 6 Parameter Set.
- Channelisation code		(i/SF) where i denotes an unassigned code matching the SF specified in TS34.108 clause 6 Parameter Set.
- CHOICE more timeslots		The presence of this IE depends upon the number of resources specified in TS34.108 section 6 and the number of slots in which they are being assigned.
CHOICE Mode		TDD
Downlink information common for all radio links	A1, A2, A3, A4	
- Downlink DPCH info common for all RL		
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
- CHOICE mode		TDD
- TPC step size		1 dB
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps

- TSTD indicator		TRUE
- Default DPCH offset value		0
Downlink information for each radio link list	A1, A2, A3, A4	
- Downlink information for each radio link		
- CHOICE mode		TDD
- Primary CCPCH info		
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps
- TSTD indicator		TRUE
- Cell parameters ID		0
- Block STTD indicator		FALSE
- Downlink DPCH info for each RL		
- CHOICE mode		TDD
- DL CCTrCH List		
- TFCS ID		1
- Time info		
- Activation time		(256+CFN-(CFN mod 8 + 8))mod 256
- Duration		infinite
- Common timeslot info		
- 2nd interleaving mode		Reference to TS34.108
- TFCI coding		TRUE
- Puncturing limit		Reference to TS34.108 clause 6 Parameter Set
- Repetition period		1
- Repetition length		Empty
- Downlink DPCH timeslots and codes		
- Individual timeslot info		
- Timeslot number		The number of a downlink timeslot that has unassigned codes.
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble allocation mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps TDD
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot channelisation codes		
- First channelisation code		(i/SF) where i is the lowest numbered code that is being assigned and SF is specified in TS34.108 clause 6 Parameter Set..
- Last channelisation code		(j/SF) where j is the highest numbered code that is being assigned in the slot.
- Bitmap		Bitmap of the codes that are being assigned in the slot.
- CHOICE more timeslots		The presence of this IE depends upon whether the requirements of TS34.108 clause 6 Parameter Set could be met by the codes that have been assigned in the first timeslot..
- UL CCTrCH TPC List		Not Present
-SCCPCH information for FACH		Not Present
Downlink information for each radio link list	A5, A6	
- Downlink information for each radio link		
- Choice mode		TDD
- Primary CCPCH info		
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps
- TSTD indicator		TRUE
- Cell parameters ID		0
- Block STTD indicator		TRUE
- Downlink DPCH info for each RL		Not Present
- SCCPCH information for FACH		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of RADIO BEARER RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
URA identity		Not Present
RAB information to reconfigure list		Not Present
RB information to reconfigure list	A1, A2, A3	Not Present
RB information to reconfigure list	A4	
- RB information to reconfigure		(UM DCCH for RRC)
- RB identity		1
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		1
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		5
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		2
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)

- RB identity		3
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		All
- MAC logical channel priority		3
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		3
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		All
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		4
- RB information to reconfigure		(AM DTCH)
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
- RB stop/continue		Not Present
RB information to reconfigure list	A5,A6	
- RB information to reconfigure		(UM DCCH for RRC)
- RB identity		1
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		1
- CHOICE RLC size list		Explicit list
- RLC size index		Reference to TS34.108 clause 6 Parameter Set

- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		1
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		2
- CHOICE RLC size list		Explicit List
- RLC size index		Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		2
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)
- RB identity		3
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		3
- CHOICE RLC size list		Explicit list
- RLC size index		Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		3
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		4
- CHOICE RLC size list		Explicit list
- RLC size index		Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority		5
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		4
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DTCH)
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		

- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		7
- CHOICE RLC size list		Explicit list
- RLC size index		Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority		6
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		6
- RB stop/continue		Not Present
- RB information to reconfigure		(TM BCCH for RRC)
- RB identity		5
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		Not Present
- CHOICE Downlink RLC mode		TM RLC
- Segmentation Indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		5
- RB stop/continue		Not Present
- RB information to reconfigure		(TM PCCH for RRC)
- RB identity		7
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		Not Present
- CHOICE Downlink RLC mode		TM RLC
- Segmentation Indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		PCH
- Logical channel identity		1
- RB stop/continue		Not Present
RB information to be affected	A1, A2, A3	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		1
RB information to be affected	A1, A2, A3	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2

- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		10
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		1
- Logical channel identity		2
RB information to be affected	A1, A2, A3	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		All
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		3
RB information to be affected	A1, A2, A3	(AM DCCH for NAS_DT Low priority)
- RB identity		4
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		All
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		4
RB information to be affected	A1, A2, A3	(TM DTCH)
- RB identity		10
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
RB information to be affected	A2	(DTCH TM)
- RB identity		11
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		2
- Logical channel identity		8
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		7

- Logical channel identity		8
RB information to be affected	A2	(This IE is needed for 12.2 kbps and 10.2 kbps)
- RB identity		12
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		3
- Logical channel identity		9
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		8
- Logical channel identity		9
UL Transport channel information for all transport channels	A1, A2, A3, A4	
- PRACH TFCS		Not Present
- CHOICE mode		TDD
- Individual UL CCTrCH information		
- TFCS ID		1
- Shared channel indicator		FALSE
- UL TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
- TFC subset		
- CHOICE Subset representation		Allowed transport format combination list
- Allowed Transport Format combination list		Refer to TS34.108 clause 6 Parameter Set
UL Transport channel information for all transport channels	A5, A6	
- PRACH TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
- CHOICE mode		TDD
- Individual UL CCTrCH information		Not Present
Deleted UL TrCH information	A1, A2, A3	Not Present
Deleted UL TrCH information	A4	
- Uplink transport channel type		DCH
- Transport channel identity		15
Deleted UL TrCH information	A5	
- Uplink transport channel type		DCH
- Transport channel identity		1
- Uplink transport channel type		DCH
- Transport channel identity		5
Added or Reconfigured UL TrCH information	A1, A2, A3, A4	
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter

		Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
Added or Reconfigured UL TrCH information	A4	
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
DL Transport channel information common for all transport channel	A1, A3	
- SCCPCH TFCS		Not Present
- CHOICE mode		TDD
- Individual DL CCTrCH information		
- DL TFCS Identity		
- TFCS ID		1
- Shared Channel Indicator		FALSE
- CHOICE DL parameters		Independent
- DL TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 Information		
- CHOICE TFCI representation		Addition
- TFCS addition information		
- CHOICE CTFC size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
DL Transport channel information common for all transport channel	A2, A4	
- SCCPCH TFCS		Not Present
- CHOICE mode		TDD
- Individual DL CCTrCH information		
- DL TFCS Identity		
- TFCS ID		1
- Shared Channel Indicator		FALSE
- CHOICE DL parameters		Independent
- DL TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 Information		
- CHOICE TFCI representation		Addition
- TFCS addition information		
- CHOICE CTFC size		Refer to TS34.108 clause 6

- CTFC information		Refer to TS34.108 clause 6 Parameter Set
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE mode - Individual DL CCTrCH information	A5, A6	 (This IE is repeated for TFC number.) Normal Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6. Refer to TS34.108 clause 6 Parameter Set Not Present TDD Not Present
jDeleted DL TrCH information	A1, A2, A3, A6	Not Present
Deleted DL TrCH information - Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity	A4	 DCH 12 DCH 13 DCH 14
Deleted DL TrCH information - Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity	A5	 DCH 6 DCH 10
Added or Reconfigured DL TrCH information - Downlink transport channel type - Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH Identity - DCH quality target - BLER Quality value - Transparent mode signalling info	A1	 DCH 10 Same as UL DCH 5 -6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size - DCH quality target - BLER Quality value - Transparent mode signalling info	A2, A3, A4	 DCH 10 Independent Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6 Parameter Set ALL Reference to TS34.108 clause 6 Parameter Set Reference to TS34.108 clause 6 Parameter Set Reference to TS34.108 clause 6 Parameter Set Reference to TS34.108 clause 6 Parameter Set Reference to TS34.108 clause 6 Parameter Set -6.3 Not Present
Frequency info - CHOICE mode - UARFCN (Nt)		 TDD Reference to TS34.108 clause 6

Maximum allowed UL TX power		30dBm
CHOICE channel requirement	A1, A2, A3, A4	Uplink DPCH info
-Uplink DPCH power control info		
- CHOICE mode		TDD
- UL Target SIR		Reference to TS34.108
- CHOICE UL OL PC info		Individually signalled
- CHOICE TDD option		1.28 Mcps TDD
- TPC step size		1 dB
- Primary CCPCH Tx Power		Reference to TS34.108
- CHOICE mode		TDD
- Uplink Timing Advance Control		Not Present
- UL CCTrCH List		
- TFCS ID		1
- Time info		
- Activation time		(256+CFN-(CFNmod 8 + 8))MOD256
- Duration		infinite
- Common timeslot info		
- 2nd interleaving mode		Reference to TS34.108 clause 6 Parameter Set.
- TFCI coding		Reference to TS34.108 clause 6 Parameter Set
- Puncturing Limit		Reference to TS34.108 clause 6 Parameter Set
- Repetition Period		1
- Repetition Length		Empty
- Uplink DPCH timeslots and codes		
- First timeslot information		
- CHOICE TDD option		1.28 Mcps
- Timeslot number		The number of an uplink timeslot that has unassigned codes.
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble Allocation Mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot code list		Repeated (1,2) for each channelisation code that is assigned in the slot.
- Channelisation Code		(i/SF) where i denotes the code that is being assigned and SF is specified in TS34.108 clause 6 Parameter Set.
- CHOICE more timeslots		The presence of this IE depends on number of resources specified in TS34.108 section 6 and whether they are being assigned in more than one timeslot.
CHOICE channel requirement	A5, A6	Not Present
CHOICE Mode		TDD
Downlink information common for all radio links	A1, A2, A4	
- Downlink DPCH info common for all RL		
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
-CHOICE mode		TDD
-TPC Step Size		1
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps
- TSTD indicator		TRUE
- Default DPCH Offset Value		Not Present
-Downlink information for each radio link	A1, A2, A3, A4	
- Downlink information for each radio links		
- CHOICE mode		TDD
- Primary CCPCH info		
- CHOICE mode		TDD

- CHOICE TDD option		1.28 Mcps
- TSTD indicator		TRUE
- Cell parameters ID		0
- Block STTD indicator		FALSE
- Downlink DPCH info for each RL		
- CHOICE mode		TDD
- DL CCTrCH List		
- TFCS ID		1
- Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Duration		Infinite
- Common timeslot info		
- 2nd interleaving mode		Reference to TS34.108
- TFCI coding		TRUE
- Puncturing limit		Reference to TS34.108 clause 6 Parameter Set
- Repetition period		1
- Repetition length		Empty
- Downlink DPCH timeslots and codes		
- Individual timeslot info		
- Timeslot number		The number of a downlink timeslot that has unassigned codes
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble allocation mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps TDD
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot channelisation codes		
- First channelisation code		(i/SF) where i is the lowest numbered code assigned within the timeslot and SF is specified in TS34.108 clause 6 Parameter Set.
- Last channelisation code		(j/SF) where j is the highest numbered code assigned in the timeslot.
- Bitmap		Bitmap of the codes assigned in this timeslot.
- CHOICE more timeslots		The presence of this IE depends upon slot allocations used in the test.
- Secondary CCPCH info		Not Present
- Downlink information for each radio link	A5, A6	
- Choice mode		TDD
- Primary CCPCH info		
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps TDD
- TSTD indicator		TRUE
- Cell parameters ID		0
- Block STTD indicator		TRUE
- Downlink DPCH info for each RL		Not present
- SCCPCH information for FACH		Not present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of RADIO BEARER RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink RADIO BEARER RECONFIGURATION COMPLETE message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM and (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of RADIO BEARER RELEASE message: AM or UM (The others of speech in CS)

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3.
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC State indicator	CELL_DCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	Not Present
RAB information to reconfigure list	Not Present
RB information to release	
- RB identity	10
RB information to be affected	(UM DCCH for RRC)
- RB identity	1
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	1
- CHOICE RLC size list	All
- MAC logical channel priority	1
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- Logical channel identity	1
RB information to be affected	(AM DCCH for RRC)
- RB identity	2
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	2
- CHOICE RLC size list	All
- MAC logical channel priority	2
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- Logical channel identity	2
RB information to be affected	(AM DCCH for NAS_DT High priority)
- RB identity	3
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	3
- CHOICE RLC size list	All
- MAC logical channel priority	3
- Downlink RLC logical channel info	

- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- Logical channel identity	3
RB information to be affected	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	4
- CHOICE RLC size list	All
- MAC logical channel priority	4
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- Logical channel identity	4
Downlink counter synchronisation info	Not Present
UL Transport channel information for all transport channels	
- PRACH TFCS	Not Present
- CHOICE mode	TDD
- Individual UL CCTrCH information	
- TFCS ID	1
- Shared channel indicator	FALSE
- UL TFCS	
- CHOICE TFCI signalling	Normal
- TFCI Field 1 information	
- CHOICE TFCI representation	Addition
- TFCS addition information	
- CHOICE CTFC Size	Refer to TS34.108 clause 6
- CTFC information	Refer to TS34.108 clause 6 Parameter Set
- TFC subset	
- CHOICE Subset representation	Allowed transport format combination list
- Allowed Transport Format combination list	Refer to TS34.108 clause 6 Parameter Set
Deleted UL TrCH Information	
- Transport channel identity	1
Added or Reconfigured UL TrCH information	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- TFS	
- CHOICE Transport channel type	Dedicated transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC Size	Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Transmission Time Interval	Not Present
- Number of Transport blocks	Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6 Parameter Set
- CRC size	Reference to TS34.108 clause 6 Parameter Set
CHOICE mode	TDD
DL Transport channel information common for all transport channel	
- SCCPCH TFCS	Not Present
- CHOICE mode	TDD
- Individual DL CCTrCH information	
- DL TFCS Identity	
- TFCS ID	1
- Shared Channel Indicator	FALSE

- CHOICE DL parameters	Independent
- DL TFCS	
- CHOICE TFCI signalling	Normal
- TFCI Field 1 Information	
- CHOICE TFCI representation	Addition
- TFCS addition information	
- CHOICE CTFC size	Refer to TS34.108 clause 6
- CTFC information	Refer to TS34.108 clause 6 Parameter Set
Deleted DL TrCH Information	
- Transport channel identity	6
Added or Reconfigured DL TrCH information	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Downlink transport channel type	DCH
- DL Transport channel identity	10
- CHOICE DL parameters	Independent
- TFS	
- CHOICE Transport channel type	Dedicated transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC Size	Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Transmission Time Interval	Not Present
- Number of Transport blocks	Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6 Parameter Set
- CRC size	Reference to TS34.108 clause 6 Parameter Set
- DCH quality target	
- BLER Quality value	-6.3
- Transparent mode signalling info	Not Present
Frequency info	
- CHOICE mode	TDD
- UARFCN (Nt)	Reference to TS34.108 clause 6 Parameter Set
Maximum allowed UL TX power	30dBm
Uplink DPCH info	
- CHOICE mode	TDD
- Uplink DPCH power control info	
- UL Target SIR	Reference to TS34.108
- CHOICE UL OL PC info	Individually signalled
- CHOICE TDD option	1.28 Mcps TDD
- TPC step size	1
- Primary CCPCH Tx Power	Reference to TS34.108
- CHOICE mode	TDD
- Uplink Timing Advance Control	Not Present
- UL CCTrCH List	
- TFCS ID	1
- Time info	
- Activation time	(256+CFN-(CFN MOD 8 + 8) MOD 256
- Duration	Infinite
- Common timeslot info	
- 2nd interleaving mode	Reference to TS34.108 clause 6 Parameter Set .
- TFCI coding	Reference to TS34.108 clause 6 Parameter Set.
- Puncturing Limit	Reference to TS34.108 clause 6 Parameter Set.
- Repetition Period	Reference to TS34.108 clause 6 Parameter Set.
- Repetition Length	Reference to TS34.108 clause 6 Parameter Set.
- Uplink DPCH timeslots and codes	
- First timeslot information	
- CHOICE TDD option	1.28 Mcps
- Timeslot number	The number of an uplink timeslot that has unassigned codes.
- TFCI existence	TRUE
- Midamble shift and burst type	
- CHOICE TDD option	1.28 Mcps
- Midamble Allocation Mode	Default
- Midamble configuration	16
- CHOICE TDD option	1.28 Mcps

- Modulation	QPSK
- SS-TPC Symbols	1
- First timeslot code list	Repeated (1,2) for each channelisation code that is assigned in the timeslot.
- Channelisation Code	(i/SF) where i denotes an unassigned code and SF is specified in TS34.108 clause 6 Parameter Set.
- CHOICE more timeslots	The presence of this IE depends on number of resources specified in TS34.108 section 6 and whether they are assigned in more than one timeslot.
CHOICE Mode	TDD
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing indicator	Maintain
- CFN-targetSFN frame offset	Not Present
- Downlink DPCH power control information	
-CHOICE mode	TDD
-TPC Step Size	1
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps
- TSTD indicator	TRUE
- Default DPCH Offset Value	0
Downlink information for each radio link list	
- Downlink information for each radio links	
- CHOICE mode	TDD
- Primary CCPCH info	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps
- TSTD indicator	TRUE
- Cell parameters ID	0
- Block STTD indicator	FALSE
- Downlink DPCH info for each RL	
- CHOICE mode	TDD
- DL CCTrCH List	
- TFCS ID	1
- Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
- Duration	Infinite
- Common timeslot info	
- 2nd Interleaving mode	Reference to TS34.108 clause 6 Parameter Set
-TFCI coding	Reference to TS34.108 clause 6 Parameter Set
- Puncturing limit	Reference to TS34.108 clause 6 Parameter Set
- Repetition period	1
- Repetition length	Empty
- Downlink DPCH timeslots and codes	
- Individual timeslot info	
- Timeslot number	The number of a downlink timeslot that has unassigned codes.
- TFCI existence	TRUE
- Midamble shift and burst type	
- CHOICE TDD option	1.28 Mcps
- Midamble allocation mode	Default
- Midamble configuration	16
- CHOICE TDD option	1.28 Mcps TDD
- Modulation	QPSK
- SS-TPC Symbols	1
- First timeslot channelisation codes	
- First channelisation code	(i/SF) where i is the lowest numbered unused code that is assigned in the timeslot and SF is specified in TS34.108 Parameter Set.
- Last channelisation code	(j/SF) where j is the highest numbered code that is assigned in the timeslot.
- Bitmap	Bitmap of codes assigned in the slot.
- CHOICE more timeslots	The presence of this IE depends upon whether the resources specified in the TS34.108 clause 6 Parameter Set require the use of more than one timeslot.
- Secondary CCPCH info	Not Present

Contents of RADIO BEARER RELEASE message: AM or UM (Speech in CS)

Information Element		Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
Signalling Connection release indication		Not Present
URA identity		Not Present
RAB information to reconfigure list		Not Present
RB information to release	A2	
- RB identity		10
RB information to release	A2	
- RB identity		11
RB information to release	A2	
- RB identity		12
RB information to release	A3, A4, A5, A6	
- RB identity		20
RB information to release	A4	
- RB identity		6
RB information to release	A4	
- RB identity		7
RB information to be affected	A2, A3, A4	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		1
RB information to be affected	A2, A3, A4	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2
- Downlink RLC logical channel info		

- Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - Logical channel identity		1 DCH 10 2
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - UL Transport channel identity - Logical channel identity - CHOICE RLC size list - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - Logical channel identity	A2, A3, A4	(AM DCCH for NAS_DT High priority) 3 Not Present 1 DCH 5 3 All 3 1 DCH 10 3
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - UL Transport channel identity - Logical channel identity - CHOICE RLC size list - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - Logical channel identity	A2, A3, A4	(AM DCCH for NAS_DT Low priority) 4 Not Present 1 DCH 5 4 All 4 1 DCH 10 4
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(UM DCCH for RRC) 1 Not Present 1 RACH 1 Explicit list Reference to TS34.108 clause 6 Parameter Set 2 1 FACH 1
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(AM DCCH for RRC) 2 Not Present 1 RACH 2 Explicit list Reference to TS34.108 clause 6 Parameter Set 3 1 FACH 2

RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(AM DCCH for NAS_DT High priority) 3 Not Present 1 RACH 3 Explicit list Reference to TS34.108 clause 6 Parameter Set 4 1 FACH 3
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL Transport channel identity - Logical channel identity	A5, A6	(AM DCCH for NAS_DT Low priority) 4 Not Present 1 RACH 4 Explicit list Reference to TS34.108 clause 6 Parameter Set 5 1 FACH 1 4
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(TM BCCH for RRC) 6 1 FACH 5
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(TM PCCH for RRC) 7 1 PCH 1
Downlink counter synchronisation info		Not Present
UL Transport channel information for all transport channels - PRACH TFCS - CHOICE mode - Individual UL CCTrCH information - TFCS ID - Shared channel indicator - UL TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - TFC subset - CHOICE Subset representation - Allowed Transport Format combination list	A2, A4	 Not Present TDD 1 FALSE Normal Addition Refer to TS34.108 clause 6 Refer to TS34.108 clause 6 Parameter Set Allowed transport format combination list Refer to TS34.108 clause 6 Parameter Set
UL Transport channel information for all transport	A3	

channels		
- PRACH TFCS		Not Present
- CHOICE mode		TDD
- Individual UL CCTrCH information		
- TFCS ID		1
- Shared channel indicator		FALSE
- UL TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
- TFC subset		
- CHOICE Subset representation		Allowed transport format combination list
- Allowed Transport Format combination list		Refer to TS34.108 clause 6 Parameter Set
UL Transport channel information for all transport channels	A5, A6	
- PRACH TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
- CHOICE mode		TDD
- Individual UL CCTrCH information		Not Present
Deleted UL TrCH Information	A2, A5	
- Uplink transport channel type		DCH
- Transport channel identity		1
Deleted UL TrCH Information	A2	
- Uplink transport channel type		DCH
- Transport channel identity		2
Deleted UL TrCH Information	A2	
- Uplink transport channel type		DCH
- Transport channel identity		3
Deleted UL TrCH Information	A3	
- Uplink transport channel type		DCH
- Transport channel identity		6
Added or Reconfigured UL TrCH information	A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
DL Transport channel information common for all transport channel	A2, A3, A4	

- SCCPCH TFCS		Not Present
- CHOICE mode		TDD
- Individual DL CCTrCH information		
- DL TFCS Identity		
- TFCS ID		1
- Shared Channel Indicator		FALSE
- CHOICE DL parameters		Independent
- DL TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 Information		
- CHOICE TFCI representation		Addition
- TFCS addition information		
- CHOICE CTFC size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
DL Transport channel information common for all transport channel	A5, A6	
- SCCPCH TFCS		(This IE is repeated for TFC number.)
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Number of bits used must be enough to cover all combinations of CTFC from clauses 6.
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
- Power offset information		Not Present
- CHOICE mode		TDD
- Individual DL CCTrCH information		Not Present
Deleted DL TrCH Information	A2, A3, A5	
- Downlink transport channel type		DCH
- Transport channel identity		6
Deleted DL TrCH Information	A2	
- Downlink transport channel type		DCH
- Transport channel identity		7
Deleted DL TrCH Information	A2	
- Downlink transport channel type		DCH
- Transport channel identity		8
Added or Reconfigured DL TrCH information	A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Downlink transport channel type		DCH
- DL Transport channel identity		10
- CHOICE DL parameters		Independent
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present

Frequency info - CHOICE mode - UARFCN (Nt)		 TDD Reference to TS34.108 clause 6 Parameter Set
Maximum allowed UL TX power		30dBm
CHOICE channel requirement -Uplink DPCH power control info - CHOICE mode - UL Target SIR - CHOICE UL OL PC info - CHOICE TDD option - TPC step size - Primary CCPCH Tx Power - CHOICE mode - Uplink Timing Advance Control - UL CCTrCH List - TFCS ID - Time info - Activation time - Duration - Common timeslot info - 2nd interleaving mode - TFCI coding - Repetition Period - Repetition Length - Uplink DPCH timeslots and codes - First timeslot information - CHOICE TDD option - Timeslot number - TFCI existence - Midamble shift and burst type - CHOICE TDD option - Midamble Allocation Mode - Midamble configuration - CHOICE TDD option - Modulation - SS-TPC Symbols - First timeslot code list - Channelisation Code - CHOICE more timeslots	A2, A2, A4	Uplink DPCH info TDD Reference to TS34.108 Individually signalled 1.28 Mcps TDD 1 Reference to TS34.108 TDD Not Present 1 (256+CFN-(CFNmod 8 + 8))MOD256 Infinite Reference to TS34.108 clause 6. Reference to TS34.108 clause 6. 1 Empty 1.28 Mcps The number of an uplink timeslot that has unassigned codes. TRUE 1.28 Mcps Default 16 1.28 Mcps QPSK 1 Repeated (1,2) for each channelisation code that is assigned in the slot. (i/SF) where i denotes the code that is being assigned and SF is specified in TS34.108 clause 6 Parameter Set. The presence of this IE depends on the number of resources specified in TS34.108 section 6 and whether they are assigned in more than one timeslot.
CHOICE Mode		TDD
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing indicator - CFN-targetSFN frame offset - Downlink DPCH power control information -CHOICE mode -TPC Step Size - CHOICE mode - CHOICE TDD option - TSTD indicator - Default DPCH Offset Value	A2, A3, A4	 Maintain Not Present TDD 1 TDD 1.28 Mcps TRUE Not Present
Downlink information for each radio link list - Downlink information for each radio links - CHOICE mode - Primary CCPCH info - CHOICE mode - CHOICE TDD option - TSTD indicator - Cell parameters ID - Block STTD indicator	A2, A3, A4	 TDD TDD 1.28 Mcps TRUE 0 FALSE

- Downlink DPCH info for each RL		
- CHOICE mode		TDD
- DL CCTrCH List		
- TFCS ID		1
- Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Duration		Infinite
- Common timeslot info		
- 2nd Interleaving mode		Reference to TS34.108 clause 6
-TFCI coding		Reference to TS34.108 clause 6
- Puncturing limit		Reference to TS34.108 clause 6
- Repetition period		1
- Repetition length		Empty
- Downlink DPCH timeslots and codes		
- Individual timeslot info		
- Timeslot number		The number of a downlink timeslot that has unassigned codes.
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble allocation mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps TDD
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot channelisation codes		
- First channelisation code		(i/SF) where i is the lowest numbered code assigned in the timeslot and SF is specified in TS34.108 clause 6 arameter Set.
- Last channelisation code		(j/SF) where j is the highest numbered code assigned in the timeslot.
- Bitmap		Bitmap of the codes assigned in the timeslot.
- CHOICE more timeslots		The presence of this IE depends upon the number of resources required by the TS34.108 clause 6 Parameter Set and whether they are assigned using more than one timeslot.
- Secondary CCPCH info		Not Present
Downlink information common for all radio links	A5, A6	
- Downlink information for each radio link		
- Choice mode		TDD
- Primary CCPCH info		
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps TDD
- TSTD indicator		TRUE
- Cell parameters ID		0
- Block STTD indicator		FALSE
- Downlink DPCH info for each RL		Not present
- SCCPCH information for FACH		Not present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of UTRAN MOBILITY INFORMATION message: AM or UM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
New U-RNTI	See the test content
New C-RNTI	See the test content
UE Timers and constants in connected mode	
- T301	2000 milliseconds
- N301	2
- T302	4000 milliseconds
- N302	3
- T304	1000 milliseconds
- N304	3
- T305	60 minutes
- T307	50 seconds
- T308	320 milliseconds
- T309	8 seconds
- T310	320 milliseconds
- N310	5
- T311	500 milliseconds
- T312	5 seconds
- N312	200
- T313	10 seconds
- N313	200
- T314	20 seconds
- T315	30 seconds
- N315	200
- T316	50 seconds
- T317	1800 seconds
CN information info	Not Present
URA identity	Not present
Downlink counter synchronisation info	Not Present

Contents of UTRAN MOBILITY INFORMATION CONFIRM message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the value of the same IE in downlink UTRAN MOBILITY INFORMATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM, (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of RRC CONNECTION REJECT message: UM

Information Element	Value/remark
Message Type	
Initial UE identity	Set to the UE's IMSI (GSM-MAP) or TMSI.
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Rejection cause	Unspecified
Wait Time	0
Redirection info	Not Present

Contents of RRC CONNECTION SETUP message: UM (Transition to CELL_FACH)

Information Element	Value/remark
Message Type	
Initial UE identity	Reference to TS34.108 clause 6 Parameter Set
RRC transaction identifier	Arbitrarily select a integer between 0 and 3
Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI	
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
New C-RNTI	0000 0000 0000 0001B
RRC state indicator	CELL_FACH
UTRAN DRX cycle length coefficient	5 (2 to 12)
Capability update requirement	
- UE radio access FDD capability update requirement	FALSE
- UE radio access 3.84Mcps TDD capability update requirement	FALSE
- UE radio access 1.28Mcps TDD capability update requirement	FALSE
- System specific capability update requirement	Not Present
Signalling RB information to setup	(UM DCCH for RRC)
- RB identity	1
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	UM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- CHOICE Downlink RLC mode	UM RLC
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- Logical channel identity	1
- CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority	2
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- Logical channel identity	1
Signalling RB information to setup	(AM DCCH for RRC)
- RB identity	2
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200
- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200

- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- Logical channel identity	2
- CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority	3
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- Logical channel identity	2
Signalling RB information to setup	(AM DCCH for NAS_DT High priority)
- RB identity	3
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200
- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- Logical channel identity	3
- CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority	4
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- Logical channel identity	3
Signalling RB information to setup	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200

- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- Logical channel identity	4
- CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6 Parameter Set
- MAC logical channel priority	5
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- Logical channel identity	4
UL Transport channel information for all transport channels	
- TFC subset	(This IE is repeated for TFC number.)
- Allowed Transport Format combination	0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6 Parameter Set.)
- PRACH TFCS	Not Present
- CHOICE mode	FDD
- UL DCH TFCS	Not Present
Added or Reconfigured UL TrCH information	
- Transport channel identity	15
- TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC Size	Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Number of Transport blocks	Reference to TS34.108 clause 6 Parameter Set
- CHOICE mode	TDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6 Parameter Set
- CRC size	Reference to TS34.108 clause 6 Parameter Set
DL Transport channel information common for all transport channel	
- SCCPCH TFCS	(This IE is repeated for TFC number.)
- CHOICE TFCI signalling	Normal
- TFCI Field 1 information	
- CHOICE CTFC representation	Complete
- TFCS complete reconfigure information	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.
- CTFC information	Refer to TS34.108 clause 6 Parameter Set
- Power offset information	Not Present
- CHOICE DL parameters	Independent
- DL DCH TFCS	Not Present
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 6 Parameter Set
- UARFCN downlink(Nd)	Reference to TS34.108 clause 6 Parameter Set
Maximum allowed UL TX power	30dBm
CHOICE channel requirement	Not Present

Downlink information common for all radio links	Not Present
Downlink information for each radio link list	
- Downlink information for each radio link	
- Choice mode	TDD
- Primary CPICH info	Set to the default value of cell 1.
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	Not present
- Secondary CCPCH info	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- Secondary CPICH info	Not Present
- Secondary scrambling code	Not Present
- STTD indicator	FALSE
- Spreading factor	Reference to clause 6 Parameter Set
- Code number	SF-1(SF is reference to clause 6 Parameter Set)
- Pilot symbol existence	FALSE
- TFCI existence	TRUE
- Fixed or Flexible position	Flexible
- Timing offset	0
- References to system information blocks	Not present

Contents of RRC STATUS message: AM

Information Element	**Value/remark**
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Identification of received message	Not Present
- Received message type	
- RRC transaction identifier	
Protocol error information	
- Protocol error cause	Value will be checked.

Contents of SECURITY MODE FAILURE message: AM

Information Element	**Value/remark**
Message Type	
RRC transaction identifier	Checked to see if the value is the identical to the same IE in the downlink SECURITY MODE COMMAND message.
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Value will be checked

Contents of TRANSPORT CHANNEL RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_DCH should this be CELL_FACH ??? because it indicates the state that is to be entered.
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
URA identity		Not Present
Downlink counter synchronisation info		Not Present
UL Transport channel information for all transport channels	A1, A2, A3, A4	
- PRACH TFCS		Not Present
- CHOICE mode		TDD
- Individual UL CCTrCH information		
- TFCS ID		1
- Shared channel indicator		FALSE
- UL TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
- TFC subset		
- CHOICE Subset representation		Allowed transport format combination list
- Allowed Transport Format combination list		Refer to TS34.108 clause 6 Parameter Set
UL Transport channel information for all transport channels	A5, A6	
- PRACH TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE TFCS representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
- CHOICE mode		TDD
- Individual UL CCTrCH information		Not Present
Added or Reconfigured UL TrCH information	A1, A2, A3, A4	
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present

- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel List		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
Added or Reconfigured UL TrCH information	A4	
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
DL Transport channel information common for all transport channel	A1, A2, A3, A4	
- SCCPCH TFCS		Not Present
- CHOICE mode		TDD
- Individual DL CCTrCH information		
- DL TFCS Identity		
- TFCS ID		1
- Shared Channel Indicator		FALSE
- CHOICE DL parameters		Independent
- DL TFCS		
- CHOICE TFCI signalling		Normal
- TFCI Field 1 Information		
- CHOICE TFCI representation		Addition
- TFCS addition information		
- CHOICE CTFC size		Refer to TS34.108 clause 6
- CTFC information		Refer to TS34.108 clause 6 Parameter Set
DL Transport channel information common for all transport channel	A5, A6	
- SCCPCH TFCS		Not Present
- CHOICE mode		TDD
- Individual DL CCTrCH information		Not Present
Added or Reconfigured DL TrCH information	A1, A2	
- Downlink transport channel type		DCH
- DL Transport channel identity		10
- CHOICE DL parameters		Same as UL
- Uplink transport channel type		DCH
- UL TrCH Identity		5
- DCH quality target		
- BLER Quality value		-6.3

- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A3, A4	
- Downlink transport channel type		DCH
- DL Transport channel identity		10
- CHOICE DL parameters		Independent
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A4	
- Downlink transport channel type		DCH
- DL Transport channel identity		6
- CHOICE DL parameters		Independent
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6 Parameter Set
- CRC size		Reference to TS34.108 clause 6 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Frequency info		
- CHOICE mode		TDD
- UARFCN (Nt)		Reference to TS34.108 clause 6
Maximum allowed UL TX power		30dBm
CHOICE channel requirement	A1, A2, A3, A4	Uplink DPCH info
-Uplink DPCH power control info		
- CHOICE mode		TDD
- UL Target SIR		Refrence to TS34.108
- CHOICE UL OL PC info		Individually signalled

- CHOICE TDD option		1.28 Mcps TDD
- TPC step size		1
- Primary CCPCH Tx Power		Reference to TS34.108
- CHOICE mode		TDD
- Uplink Timing Advance Control		Not Present
- UL CCTrCH List		
- TFCS ID		1
- Time info		
- Activation time		(256+CFN-(CFNmod 8 + 8))mod 256
- Duration		Infinite
- Common timeslot info		
- 2nd interleaving mode		Reference to TS34.108 clause 6 Parameter Set
- TFCI coding		Reference to TS34.108 clause 6 Parameter Set
- Repetition Period		1
- Repetition Length		Empty
- Uplink DPCH timeslots and codes		
- First timeslot information		
- CHOICE TDD option		1.28 Mcps
- Timeslot number		The number of an uplink timeslot that has unassigned codes.
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble Allocation Mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot code list		Repeated (1,2) for each code that is assigned within the timeslot.
- Channelisation Code		(i/SF) where i denotes the number of the assigned code and SF is specified in TS34.108 clause 6 Parameter Set.
- CHOICE more timeslots		The presence of this IE depends on number of resources specified in TS34.108 section 6 and whether they are assigned in more than one slot.
CHOICE Mode		TDD
Downlink information common for all radio links	A1, A2, A3, A4	
- Downlink DPCH info common for all RL		
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
-CHOICE mode		TDD
-TPC Step Size		1
- CHOICE mode		TDD
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps
- TSTD indicator		TRUE
- Default DPCH Offset Value		0
Downlink information for each radio link list	A1, A2, A3, A4	
- Downlink information for each radio links		
- CHOICE mode		TDD
- Primary CCPCH info		
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps
- TSTD indicator		FALSE
- Cell parameters ID		0
- Block STTD indicator		FALSE
- Downlink DPCH info for each RL		
- CHOICE mode		TDD
- DL CCTrCH List		
- TFCS ID		1
- Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256

- Duration		Infinite
- Common timeslot info		
- 2nd Interleaving mode		Reference to TS34.108 clause 6
-TFCI coding		Reference to TS34.108 clause 6
- Puncturing limit		Reference to TS34.108 clause 6
- Repetition period		1
- Repetition length		Empty
- Downlink DPCH timeslots and codes		
- Individual timeslot info		
- Timeslot number		The number of a downlink timeslot that has unassigned codes.
- TFCI existence		TRUE
- Midamble shift and burst type		
- CHOICE TDD option		1.28 Mcps
- Midamble allocation mode		Default
- Midamble configuration		16
- CHOICE TDD option		1.28 Mcps TDD
- Modulation		QPSK
- SS-TPC Symbols		1
- First timeslot channelisation codes		
- First channelisation code		(i/SF) where i is the lowest numbered code assigned within the slot and SF is specified in the TS34.108 clause 6 Parameter Set..
- Last channelisation code		(j/SF) where j is the highest numbered code assigned in the timeslot.
- Bitmap		Bitmap of codes assigned in the timeslot.
- CHOICE more timeslots		The presence of this IE depends upon the number of resources required by the TS34.108 clause 6 Parameter Set and whether thay are allocated in more than one slot.
- Secondary CCPCH info		Not Present
Downlink information for each radio link list	A5, A6	
- Downlink information for each radio link		
- Choice mode		TDD
- Primary CCPCH info		Set to the default value of cell 1.
- CHOICE mode		TDD
- CHOICE TDD option		1.28 Mcps TDD
- TSTD indicator		TRUE
- Cell parameters ID		0
- Block STTD indicator		TRUE
- Downlink DPCH info for each RL		Not present
- SCCPCH information for FACH		Not present

Condition	**Explanation**
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of TRANSPORT CHANNEL RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink TRANSPORT CHANNEL RECONFIGURATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM and (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of TRANSPORT FORMAT COMBINATION CONTROL message: AM or UM (in CELL_DCH)

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
CHOICE mode	TDD
- TFCS Id	1
- Shared Channel Indicator	FALSE
DPCH TFCS in Uplink	
- Minimu allowed Transport format combination index	0 (The TFC is constructed from ALL TF0)

Contents of UE CAPABILITY ENQUIRY message: AM or UM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Capability update requirement	
- UE radio access FDD capability update requirement	FALSE
- UE radio access 3.84 Mcps TDD capability update requirement	FALSE
- UE radio access 1.28 Mcps TDD capability update requirement	TRUE
- System specific capability update requirement list	UE only supports 1 system
- System specific capability update requirement	GSM

Contents of UE CAPABILITY INFORMATION message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink UE CAPABILITY ENQUIRY message.
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
UE radio access capability	Value will be checked. Stated capability must be compatible with 34.123-2 (ICS statements) and the user settings
- ICS Version	
- PDCP Capability	
- RLC Capability	
- Transport channel capability	
- RF Capability	
- Physical channel capability	
- UE multi-mode/multi-RAT capability	
- Security capability	
- UE positioning capability	
- Measurement capability	
UE system specific capability	
-Inter-RAT UE radio access capability	Choice and value will be checked. UE must include the classmark information for the supported RAT

Contents of UE CAPABILITY INFORMATION CONFIRM message: UM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.

Contents of URA UPDATE message: TM

Information Element	Value/remark
Message Type	
U-RNTI	
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Checked to see if it is absent
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
URA update cause	See the test content
Protocol error indicator	Checked to see if it is absent or set to 'FALSE'
Protocol error information	Checked to see if it is absent

Contents of URA UPDATE CONFIRM message: UM

Information Element	Value/remark
Message Type	
U-RNTI	If this message is sent on CCCH, use the following values. Else, this IE is absent.
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Arbitrarily selects and integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC state indicator	URA_PCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	See the test content
Downlink counter synchronisation info	Not Present

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CR-Form-v3

CHANGE REQUEST

⌘ **34.123-1** **CR** **129** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	RAB tests for LCRTDD
Source:	⌘	Siemens AG
Work item code:	⌘	LCRTDD
Date:	⌘	26.November.2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘ Testing of RABs included in TS 34.108 for LCRTDD

Summary of change: ⌘ **RABs LCRTDD**

18.1 Radio Bearer Tests for 1.28 Mcps TDD option

18.1.1 General information for radio bearer tests (1.28 Mcps TDD)

18.1.2 Combinations on DPCH

18.1.2.1 Stand-alone UL:1.7 DL:1.7 kbps SRBs for DCCH
Implicitly tested.
18.1.2.2 Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH
Implicitly tested.
18.1.2.3 Stand-alone UL:13.6 DL:13.6 kbps SRBs for DCCH
Implicitly tested.
18.1.2.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH
18.1.2.5 Conversational / speech / UL:10.2 DL:10.2 kbps / CS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH
18.1.2.6 Conversational / speech / UL:7.95 DL:7.95 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH
18.1.2.7 Conversational / speech / UL:7.4 DL:7.4 kbps / CS RAB+ UL:3.4 DL:3.4 kbps SRBs for DCCH
18.1.2.8 Conversational / speech / UL:6.7 DL:6.7 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

Consequences if not approved: ⌘ 1.28 Mcps TDD option is not tested properly

Clauses affected: ⌘ 18

Other specs affected:	⌘	[ ] Other core specifications [X] Test specifications [ ] O&M Specifications	⌘	TS 34.123-2
Other comments:	⌘	Following the work already done, RABs test cases will be written according with procedures for FDD mode as far as possible. In these test cases included, transport channels are specified in the same way for FDD and TDD in TS 34.108, and according with this consideration, only references to TDD have been updated.		

18 Multi-Layer Functional Tests

The present clause specifies the multi-layer functional test cases that are not covered by the interoperability radio bearer test cases in clause 14 or by any other test cases in the present document.

18.1 Radio Bearer Tests for 1.28 Mcps TDD option

18.1.1 General information for radio bearer tests (1.28 Mcps TDD)

The purpose of these radio bearer test cases is to test properly the Reference Radio Bearer configurations included in TS34.108 [9], clause 6.11 for 1.28 Mcps TDD option.
The applicability of radio bearer tests is dependent on the UE uplink and downlink radio access capabilities and UE support tele- and bearer-services. See TS 34.123-2, annex B for applicability of the specific test cases.

18.1.1.1 Generic radio bearer test procedure

Initial conditions

UE in idle mode

Test procedure

a) The SS setup the reference radio bearer configuration as specified in TS 34.108, clause 6.11 for the actual radio bearer test.

b) The SS limits the UE allowed uplink transport format combinations according to the "Restricted UL TFCIs", as specified for the sub-test of the actual radio bearer test, using the RRC transport format combination control procedure.

c) The SS closes the test loop using UE test loop mode 1 and setting the UL RLC SDU size parameter, for all radio bearers under test, according to the "UL RLC SDU size" value as specified for the sub-test of the actual radio bearer test.

d) The SS transmits, for all radio bearers under test, an RLC SDU having the size equal to the "Test data size" as specified for the sub-test of the actual radio bearer test. See note 1.

e) The SS checks that, for all radio bearers under test, the content of the received RLC SDU has the correct content and is received having the correct transport format. See TS 34.109 [10] clause 5.3.2.6.2 for details regarding the UE loopback of RLC SDUs.

f) The SS opens the UE test loop.

g) Steps b) to f) are repeated for all sub-tests

h) The SS may optionally release the radio bearer.

i) The SS may optionally deactivate the radio bearer test mode.

NOTE: For the case when the reference radio bearer configuration under test uses RLC transperant mode in downlink then the radio bearer test case shall use a DL RLC SDU size (defined by the "Test data size" parameter) equal to the DL RLC PDU size. This is due to that the UE test loop function has no ability to perform reassembly of segmented DL RLC SDUs while the RLC is operated in transperent mode. See [7] TS 25.322 for details regarding UE operation in RLC transperent mode.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<--	SYSTEM INFORMATION (BCCH)	Broadcast
2		<--	PAGING (PCCH)	Paging
3		-->	RRC CONNECTION REQUEST (CCCH)	RRC
4		<--	RRC CONNECTION SETUP (CCCH)	RRC
5		-->	RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6		-->	PAGING RESPONSE (DCCH)	RR
7		<--	ACTIVATE RB TEST MODE (DCCH)	TC
8		-->	ACTIVATE RB TEST MODE COMPLETE (DCCH)	TC
9		<--	RADIO BEARER SETUP (DCCH)	RRC
10		-->	RADIO BEARER SETUP COMPLETE (DCCH)	RRC
11		<--	TRANSPORT FORMAT COMBINATION CONTROL	RRC Transport format combinations is limited to "Restricted UL TFCIs", as specified for the sub-test
12		<--	CLOSE UE TEST LOOP	TC UE test mode 1 RLC SDU size is for every active radio bearer set to "UL RLC SDU size", as specified for the sub-test.
13		-->	CLOSE UE TEST LOOP COMPLETE (DCCH)	TC
14		<--	DOWNLINK RLC SDU	Send test data using the downlink transport format combination under test
15		-->	UPLINK RLC SDU	
16		<--	OPEN UE TEST LOOP	TC
17		-->	OPEN UE TEST LOOP COMPLETE	TC
18			Repeat steps 11 to 17 for every sub-test.	
19			RB RELEASE	RRC Optional step
20		<--	DEACTIVATE RB TEST MODE	TC Optional step
21		-->	DEACTIVATE RB TEST MODE COMPLETE	TC Optional step

18.1.2 Combinations on DPCH

18.1.2.1 Stand-alone UL:1.7 DL:1.7 kbps SRBs for DCCH

Implicitly tested.

18.1.2.2 Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH

Implicitly tested.

18.1.2.3 Stand-alone UL:13.6 DL:13.6 kbps SRBs for DCCH

Implicitly tested.

18.1.2.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

18.1..2.4.1 Conformance requirement

The UE shall be able to establish the UTRAN requested radio bearers within the UE's signaled radio access capabilities.
The UE shall correctly transfer user data from peer to peer RLC entitities according to the requested radio bearer configuration.

Reference(s)

3GPP TS 25.331, clause 8.2.1
3GPP TS 25.2xx series (Physical Layer)
3GPP TS 25.321 (MAC)
3GPP TS 25.322 (RLC)

18.1.2.4.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.4.

18.1.2.4.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 103 bits RB7: 60 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 81 bits RB6: 103 bits RB7: 60 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

18.1.2.4.4 Test requirements

See 18.1.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.

2. At step 15 the UE transmitted transport format shall be

   - for sub-test 1: RB5/TF1 (1x39).

   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).

3. At step 15 the UE shall return

   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.

   - for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS

18.1.2.5 Conversational / speech / UL:10.2 DL:10.2 kbps / CS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

18.1.2.5.1 Conformance requirement

See clause 18.1.2.4.1.

18.1.2.5.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.5.

18.1.2.5.3 Method of test

Uplink TFS:

	TFI	**RB5 (RAB subflow #1)**	**RB6 (RAB subflow #2)**	**RB7 (RAB subflow #3)**	**DCCH**
TFS	TF0, bits	0x65(alt. 1x0)	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Uplink TFCS:

TFCI	**(RB5, RB6, RB7,DCCH)**
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	**RB6 (RAB subflow #2)**	**RB7 (RAB subflow #3)**	**DCCH**
TFS	TF0, bits	1x0	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Downlink TFCS:

TFCI	**(RB5, RB6, RB7, DCCH)**
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 99 bits RB7: 40 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 65 bits RB6: 99 bits RB7: 40 bits	RB5: 65 bits RB6: 99 bits RB7: 40 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 18.1.1.1 for test procedure.

18.1.2.5.4 Test requirements

See 18.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x65); RB6/TF1 (1x99); and RB7/TF1 (1x40).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
   - for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.

18.1.2.6 Conversational / speech / UL:7.95 DL:7.95 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

18.1.2.6.1 Conformance requirement

See clause 18.1.2.4.1.

18.1.2.6.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.6.

18.1.2.6.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x75 (alt. 1x0)	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 84 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 75 bits RB6: 84 bits	RB5: 75 bits RB6: 84 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 18.1.1.1 for test procedure.

18.1.2.6.4 Test requirements

See 18.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x75) and RB6/TF1 (1x84).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS.

18.1.2.7 Conversational / speech / UL:7.4 DL:7.4 kbps / CS RAB+ UL:3.4 DL:3.4 kbps SRBs for DCCH

18.1.2.7.1 Conformance requirement

See clause 18.1.2.4.1.

18.1.2.7.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.7.

18.1.2.7.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x61 (alt. 1x0)	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 87 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 61 bits RB6: 87 bits	RB5: 61 bits RB6: 87 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 18.1.1.1 for test procedure.

18.1.2.7.4 Test requirements

See 18.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x61) and RB6/TF1 (1x87).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

18.1.2.8 Conversational / speech / UL:6.7 DL:6.7 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

18.1.2.8.1 Conformance requirement

See clause 18.1.2.4.1.

18.1.2.8.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.8.

18.1.2.8.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x58 (alt. 1x0)	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 76 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 58 bits RB6: 76 bits	RB5: 58 bits RB6: 76 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 18.1.1.1 for test procedure.

18.1.2.8.4 Test requirements

See clause 18.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.

2. At step 15 the UE transmitted transport format shall be

   - for sub-test 1: RB5/TF1 (1x39).

   - for sub-test 2: RB5/TF2 (1x58) and RB6/TF1 (1x76).

3. At step 15 the UE shall return

   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS