Source: **T1**

Title: **CR's to TS 34.122 v3.8.0 and v4.4.0 for approval**

Agenda item: **5.1.3**

Document for: **Approval**

This document contains 3 CRs to TS 34.122 v3.8.0 and 3 CRs to TS 34.122 v4.4.0. These CRs have been agreed by T1 and are put forward to TSG T for approval.

CRs related to maintenance of R99:

Spec	CR	Rev	Release	Subject	Cat	Version Current	Version -New	Doc-2nd-Level	Work item
34.122	104	-	R99	Message Content for TDD Handover Test Cases	F	3.8.0	3.9.0	T1-020472	
34.122	106	-	R99	General corrections for power definitions and test procedures.	F	3.8.0	3.9.0	T1-020487	
34.122	108	-	R99	Correction to Receiver Spurious Emission Test Case	F	3.8.0	3.9.0	T1-020489	

CRs related to maintenance of Rel-4:

Spec	CR	Rev	Release	Subject	Cat	Version Current	Version -New	Doc-2nd-Level	Work item
34.122	105	-	Rel-4	Message Content for TDD Handover Test Cases	A	4.4.0	4.5.0	T1-020473	TEI
34.122	107	-	Rel-4	General corrections for power definitions and test procedures.	F	4.4.0	4.5.0	T1-020488	TEI, LCRTDD
34.122	109	-	Rel-4	Correction to Receiver Spurious Emission Test Case	A	4.4.0	4.5.0	T1-020490	TEI

3GPP TSG-T1 Meeting #16
Yokohama, Japan, 29 July - 2 August 2002

Tdoc ⌘T1-020472

CR-Form-v7

CHANGE REQUEST

⌘ **34.122** **CR** **104** ⌘ **rev** **-** ⌘ Current version: **3.8.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Message Content for TDD Handover Test Cases
Source:	⌘	T1-RF
Work item code:	⌘	-
Date:	⌘	29/07/2002
Category:	⌘	**F**
Release:	⌘	R99

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)
Rel-6 (Release 6)

Reason for change:	⌘	Messaging content missing for TDD/TDD handover test cases.
Summary of change:	⌘	Added messaging content for TDD/TDD handover test cases.
Consequences if not approved:	⌘	Test case would be incomplete.

Clauses affected:	⌘	8.3.1, new Annex I

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.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.

8.3.1 TDD/TDD Handover

8.3.1.1 Handover to intra-frequency cell

8.3.1.1.1 Definition and applicability

Handover delay of the UE is defined as the time from the end of the last TTI containing an RRC message implying hard handover to the transmission of the new uplink DPCH, excluding the RRC procedure delay as defined in [9].

The requirements and this test apply to the UTRA TDD UE.

8.3.1.1.2 Minimum requirement

The hard handover delay shall be less than 40 ms in the single carrier case when the cell is known by the UE and the SFN of the target cell does not need to be decoded. The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of [FFS]%.

The normative reference for this requirement is TS 25.123 [2] clauses 5.1.2 and A.5.1.1.

8.3.1.1.3 Test purpose

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the single carrier case.

8.3.1.1.4 Method of test

8.3.1.1.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

The test parameters are given in table 8.3.1.1.1 and 8.3.1.1.2. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T3 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table 8.3.1.1.1: General test parameters for Handover to intra-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 clause A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 2	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	
T1		s	10	
T2		s	10	
T3		s	10	

Table 8.3.1.1.2: Cell specific test parameters for Handover to intra-frequency cell

Parameter	**Unit**	**Cell 1**						**Cell 2**					
DL timeslot number		**0**			**4**			**0**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.			-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.			-9			n.a.		
SCH_t_{offset}	dB	0			n.a.			5			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.	n.a.			n.a.		Note 1
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.	n.a.	-3,12		n.a.		Note 2
$\hat{I}_{or}/I_{oc}$	dB	1						-Inf.	3		-Inf.		3
PCCPCH RSCP	dBm	-72			n.a.			-Inf.	-70		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .													

8.3.1.1.4.2 Procedure

1) The RF parameters are set up according to T1.

2) The UE is switched on.

3) A call is set up according to the test procedure specified in TS 34.108 [3] subclause 7.3.4.

[Editor's note: subclause 7.3.4 in TS 34.108 (Message sequence chart for Handover Test procedure) is not yet specified]

4) SS shall transmit a MEASUREMENT CONTROL message.

5) After 10 seconds, the SS shall switch the power settings from T1 to T2.

6) UE shall transmit a MEASUREMENT REPORT message triggered by event 1G.

7) SS shall transmit a PHYSICAL CHANNEL RECONFIGURATION message with activation time at T3.

8) After 10 seconds, the SS shall switch the power settings from T2 to T3

9) UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the UL DCCH of cell 2. If the UE transmits the UL DPCH to cell 2 less than 40 ms from the beginning of time period T3 then the number of successful tests is increased by one.

10) After 10 seconds, the UE is switched off. Any timing information of cell 2 is deleted in the UE.

11) Repeat step 1-10 [TBD] times.

Specific Message Contents

All messages indicated above shall use the same content as described in the default message content in clause 9 of 34.108 [3] and in Annex A of 34.123-1 [21], with the following exceptions:

MEASUREMENT CONTROL message (step 4):

Information Element/Group name	Value/Remark
Message Type (10.2.17)	
UE information elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
Measurement Information elements	
-Measurement Identity	1
-Measurement Command (10.3.7.46)	Modify
-Measurement Reporting Mode (10.3.7.49)	
-Measurement Report Transfer Mode	AM RLC
-Periodical Reporting / Event Trigger Reporting Mode	Event trigger
-Additional measurements list (10.3.7.1)	Not Present
-CHOICE *Measurement type*	Intra-frequency measurement
-Intra-frequency measurement (10.3.7.36)	
-Intra-frequency measurement objects list (10.3.7.33)	Not Present
-Intra-frequency measurement quantity (10.3.7.38)	
-Filter coefficient (10.3.7.9)	0
-CHOICE *mode*	TDD
-Measurement quantity list	1
-Measurement quantity	Primary CCPCH
-Intra-frequency reporting quantity (10.3.7.41)	
-Reporting quantities for active set cells (10.3.7.5)	
-SFN-SFN observed time difference reporting indicator	No report
-Cell synchronisation information reporting indicator	TRUE (Note 1)
-Cell Identity reporting indicator	TRUE
-CHOICE *mode*	TDD
-Timeslot ISCP reporting indicator	TRUE
-Primary CCPCH RSCP reporting indicator	TRUE
-Pathloss reporting indicator	TRUE
-Reporting quantities for monitored set cells (10.3.7.5)	
-SFN-SFN observed time difference reporting indicator	No report
-Cell synchronisation information reporting indicator	TRUE (Note 1)
-Cell Identity reporting indicator	TRUE
-CHOICE *mode*	TDD
-Timeslot ISCP reporting indicator	TRUE
-Proposed TGSN reporting required	FALSE
-Primary CCPCH RSCP reporting indicator	TRUE
-Pathloss reporting indicator	TRUE
-Reporting quantities for detected set cells (10.3.7.5)	Not Present
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report all active set cells + cells within monitored set on used frequency
-Maximum number of reported cells	2
-Measurement validity (10.3.7.51)	Not Present
-CHOICE *report criteria*	Intra-frequency measurement reporting criteria
-Intra-frequency measurement reporting criteria (10.3.7.39)	
-Parameters required for each event	1
-Intra-frequency event identity	Event 1G
-Triggering condition 2	Not Present
-Reporting Range Constant	Not Present
-Cells forbidden to affect Reporting Range	Not Present
-CHOICE *mode*	TDD
-Primary CCPCH info (10.3.6.57)	
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps
-CHOICE *sync case*	Case 2
-Timeslot	0
-Cell parameters ID	0
-SCTD indicator	FALSE
-W	Not Present
-Hysteresis	0 dB
-Threshold used frequency	Not Present
-Reporting deactivation threshold	Not Present
-Replacement activation threshold	Not Present
-Time to trigger	0 ms

Information Element/Group name	Value/Remark
-Amount of reporting	Infinity
-Reporting interval	0 ms (Note 2)
-Reporting cell status	Not Present
Physical channel information elements	
-DPCH compressed mode status info (10.3.6.34)	Not Present
Note 1: The SFN-CFN observed time difference is calculated from the OFF and Tm parameters contained in the IE "Cell synchronisation information ", TS 25.331, clause 10.3.7.6. According to TS 25.331, 8.6.7.7, this IE is included in MEASUREMENT REPORT if IE "Cell synchronisation information reporting indicator" in IE "Cell reporting quantities" TS 25.331, clause 10.3.7.5 is set to TRUE in MEASUREMENT CONTROL.	
Note 2: Reporting interval = 0 ms means no periodical reporting	

PHYSICAL CHANNEL RECONFIGURATION message (step 7):

Information Element	Value/Remark
Message Type	
UE Information Elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
-Integrity protection mode info	Not Present
-Ciphering mode info	Not Present
-Activation time	At T3
-New U-RNTI	Not Present
-New C-RNTI	Not Present
-RRC State Indicator	CELL_DCH
-UTRAN DRX cycle length coefficient	Not Present
CN Information Elements	
-CN Information info	Not Present
UTRAN mobility information elements	
-URA identity	Not Present
RB information elements	
-Downlink counter synchronisation info	Not Present
-RB with PDCP information list	Not Present
-RB with PDCP information	Not Present
PhyCH information elements	
-Frequency info (10.3.6.36)	
-CHOICE *mode*	TDD
-UARFCN (Nt)	Same UARFCN as used for cell 2
Uplink radio resources	
-Maximum allowed UL TX power	33 dBm
-CHOICE *channel requirement*	Uplink DPCH info
-Uplink DPCH info (10.3.6.88)	
-Uplink DPCH power control info (10.3.6.91)	
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps TDD
-UL Target SIR	Not Present
-CHOICE *UL OL PC info*	Individually signalled
-CHOICE *TDD option*	3.84 Mcps TDD
-Indivdual Timeslot interference info	1
-Individual timeslot interference (10.3.6.38)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps TDD
-Timeslot number	12
-UL Timeslot Interference	-90 dBm
-CHOICE *mode*	TDD
-Uplink timing advance control (10.3.6.96)	
-CHOICE *Timing Advance*	Disabled
-UL CCTrCH list	1
-UL Target SIR	TBD dB
-Time Info (10.3.6.83)	
-Activation Time	T3
-Duration	Infinite
-Common timeslot info	Not Present
-Uplink DPCH timeslots and codes (10.3.6.94)	
-Dynamic SF Usage	False
-First individual timeslot info (10.3.6.37)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps
-Timeslot number	12
-TFCI existence	True
-Midamble shift and burst type (10.3.6.41)	
-Choice *TDD option*	3.84 Mcps
-Choice Burst Type	Type 1
-Midamble Allocation Mode	Default
-Midamble configuration burst type 1 and 3	16
-Midamble shift	Not present
-CHOICE *TDD option*	3.84 Mcps
-First timeslot code list	1
-Channelisation code	8/1
-Choice more timeslots	No more timeslots

Information Element	Value/Remark
Downlink radio resources	
-CHOICE *mode*	TDD
-Downlink information common for all radio links (10.3.6.24)	
-Downlink DPCH info common for all RL (10.3.6.18)	
-Timing indicator	Initialise
-CFN-targetSFN frame offset	Not Present
-Downlink DPCH power control information (10.3.6.23)	
-CHOICE *mode*	TDD
-TPC Step size	1 dB
-CHOICE *mode*	TDD
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps
-TX Diversity mode (10.3.6.86)	None
-Default DPCH Offset Value (10.3.6.16)	0
-Downlink information per radio link list	1
-Downlink information for each radio link (10.3.6.27)	
-CHOICE *mode*	TDD
-Primary CCPCH info (10.3.6.57)	
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps
-CHOICE *sync case*	Case 2
-Timeslot	0
-Cell parameters ID	20
-SCTD indicator	False
-Downlink DPCH info for each RL (10.3.6.21)	
-CHOICE *mode*	TDD
-DL CCTrCH list	1
-TFCS ID	Not Present
-Time Info (10.3.6.83)	
-Activation Time	T3
-Duration	Infinite
-Common timeslot info	Not Present
-Downlink DPCH timeslots and codes (10.3.6.32)	
-First individual timeslot info (10.3.6.37)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps
-Timeslot number	5
-TFCI existence	True
-Midamble shift and burst type (10.3.6.41)	
-CHOICE *TDD option*	3.84 Mcps
-CHOICE *Burst Type*	Type 1
-Midamble Allocation Mode	Default
-Midamble configuration burst type 1 and 3	16
-Midamble shift	Not present
-CHOICE *TDD option*	3.84 Mcps
-First timeslot channelisation codes (10.3.6.17)	
-CHOICE *codes representation*	Consecutive codes
-First channelisation code	16/1
-Last channelisation code	16/2
-CHOICE *more timeslots*	No more timeslots
-SCCPCH information for FACH (10.3.6.70)	Not Present

MEASUREMENT REPORT message for Intra frequency test cases

This message is common for all intra frequency test cases in clause 8.7 and is described in Annex I.

8.3.1.1.5 Test requirements

For the test to pass, the total number of successful tests shall be more than [FFS] of the cases.

Note: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in clause F.4.

8.3.1.2 Handover to inter-frequency cell

8.3.1.2.1 Definition and applicability

Handover delay of the UE is defined as the time from the end of the last TTI containing an RRC message implying hard handover to the transmission of the new uplink DPCH, excluding the RRC procedure delay as defined in [9].

The requirements and this test apply to the UTRA TDD UE.

8.3.1.2.2 Minimum requirement

The hard handover delay shall be less than 40 ms in the dual carrier case when the cell is known by the UE and the SFN of the target cell needs to be decoded. The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of [FFS]%.

The normative reference for this requirement is TS 25.123 [2] clauses 5.1.2 and A.5.1.2.

8.3.1.2.3 Test purpose

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH state in the dual carrier case.

8.3.1.2.4 Method of test

8.3.1.2.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

The test parameters are given in table 8.3.1.2.1 and 8.3.1.2.2. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed time difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time at beginning of T3 with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T3 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table 8.3.1.2.1: General test parameters for Handover to inter-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 clause A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 2	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	Hysteresis parameter for event 2C
Time to Trigger		ms	0	
Threshold non-used frequency		dBm	-80	Applicable for Event 2C
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T_{SI}		s	1,28	The value shall be used for all cells in the test.
T1		s	10	
T2		s	10	
T3		s	10	

Table 8.3.1.2.2: Cell Specific parameters for Handover to inter-frequency cell

Parameter	**Unit**	**Cell 1**						**Cell 2**					
DL timeslot number		**0**			**4**			**2**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 2					
PCCPCH_Ec/Ior	dB	-3			n.a.			-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.			-9			n.a.		
SCH_t_{offset}	dB	0			n.a.			5			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.	n.a.			n.a.		Note 1
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.	n.a.	-3,12		n.a.		Note 2
$\hat{I}_{or}/I_{oc}$	dB	1						-Inf.	7		-Inf		7
PCCPCH RSCP	dBm	-72			n.a.			-Inf.	-66		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .													

8.3.1.2.4.2 Procedure

1) The RF parameters are set up according to T1.

2) The UE is switched on.

3) A call is set up according to the test procedure specified in TS 34.108 [3] subclause 7.3.4.

[Editor's note: subclause 7.3.4 in TS 34.108 (Message sequence chart for Handover Test procedure) is not yet specified]

4) SS shall transmit a MEASUREMENT CONTROL message.

5) After 10 seconds, the SS shall switch the power settings from T1 to T2.

6) UE shall transmit a MEASUREMENT REPORT message triggered by event 2C.

7) SS shall transmit a PHYSICAL CHANNEL RECONFIGURATION message with activation time at T3.

8) After 10 seconds, the SS shall switch the power settings from T2 to T3

9) UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the UL DCCH of cell 2. If the UE transmits the UL DPCH to cell 2 less than 40 ms from the beginning of time period T3 then the number of successful tests is increased by one.

10) After 10 seconds, the UE is switched off. Any timing information of cell 2 is deleted in the UE.

11) Repeat step 1-10 [TBD] times.

Specific Message Contents

All messages indicated above shall use the same content as described in the default message content in clause 9 of 34.108 [3] and in Annex A of 34.123-1 [21], with the following exceptions:

MEASUREMENT CONTROL message, event 2C (step 4):

Information Element/Group name	Value/Remark
Message Type (10.2.17)	
UE information elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
Measurement Information elements	
-Measurement Identity	1
-Measurement Command (10.3.7.46)	Modify
-Measurement Reporting Mode (10.3.7.49)	
-Measurement Report Transfer Mode	AM RLC
-Periodical Reporting / Event Trigger Reporting Mode	Event trigger
-Additional measurements list (10.3.7.1)	Not Present
-CHOICE *Measurement type*	Inter-frequency measurement
-Inter-frequency measurement (10.3.7.16)	
-Inter-frequency measurement objects list (10.3.7.13)	Not Present
-Inter-frequency measurement quantity (10.3.7.18)	
-CHOICE *reporting criteria*	Inter-frequency reporting criteria
-Inter-frequency reporting criteria	
-Filter coefficient	0
-CHOICE *mode*	TDD
-Measurement quantity for frequency quality estimate	Primary CCPCH RSCP
-Inter-frequency reporting quantity (10.3.7.21)	
-UTRA Carrier RSSI	FALSE
-Frequency quality estimate	FALSE
-Non frequency related cell reporting quantities (10.3.7.5)	
-SFN-SFN observed time difference reporting indicator	Type 1
-Cell synchronisation information reporting indicator	TRUE
-Cell Identity reporting indicator	TRUE
-CHOICE *mode*	TDD
-Timeslot ISCP reporting indicator	TRUE
-Proposed TGSN reporting required	FALSE
-Primary CCPCH RSCP reporting indicator	TRUE
-Pathloss reporting indicator	TRUE
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report cells within monitored set on non-used frequency
-Maximum number of reported cells per reported non-used frequency	1
-Measurement validity (10.3.7.51)	Not Present
-Inter-frequency set update (10.3.7.22)	Not Present
-CHOICE *report criteria*	Inter-frequency measurement reporting criteria
-Inter-frequency measurement reporting criteria (10.3.7.19)	
-Parameters required for each event	1
-Inter-frequency event identity (10.3.7.14)	Event 2C
-Threshold used frequency	Not Present
-W used frequency	Not Present
-Hysteresis	0 dB
-Time to trigger	0 ms
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report cells within monitored set on non-used frequency
-Maximum number of reported cells per reported non-used frequency	1
-Parameters required for each non-used frequency	1
-Threshold non-used frequency	-80 dBm
-W non-used frequency	1
Physical channel information elements	
-DPCH compressed mode status info (10.3.6.34)	Not Present

PHYSICAL CHANNEL RECONFIGURATION message (step 7):

Information Element	Value/Remark
Message Type	
UE Information Elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
-Integrity protection mode info	Not Present
-Ciphering mode info	Not Present
-Activation time	At T3
-New U-RNTI	Not Present
-New C-RNTI	Not Present
-RRC State Indicator	CELL_DCH
-UTRAN DRX cycle length coefficient	Not Present
CN Information Elements	
-CN Information info	Not Present
UTRAN mobility information elements	
-URA identity	Not Present
RB information elements	
-Downlink counter synchronisation info	Not Present
-RB with PDCP information list	Not Present
-RB with PDCP information	Not Present
PhyCH information elements	
-Frequency info (10.3.6.36)	
-CHOICE *mode*	TDD
-UARFCN (Nt)	Same UARFCN as used for cell 2
Uplink radio resources	
-Maximum allowed UL TX power	33 dBm
-CHOICE *channel requirement*	Uplink DPCH info
-Uplink DPCH info (10.3.6.88)	
-Uplink DPCH power control info (10.3.6.91)	
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps TDD
-UL Target SIR	Not Present
-CHOICE *UL OL PC info*	Individually signalled
-CHOICE *TDD option*	3.84 Mcps TDD
-Indivdual Timeslot interference info	1
-Individual timeslot interference (10.3.6.38)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps TDD
-Timeslot number	12
- UL Timeslot Interference	-90 dBm
-CHOICE *mode*	TDD
-Uplink timing advance control (10.3.6.96)	
-CHOICE *Timing Advance*	Disabled
-UL CCTrCH list	1
-UL Target SIR	TBD dB
-Time Info (10.3.6.83)	
-Activation Time	T3
-Duration	Infinite
-Common timeslot info	Not Present
-Uplink DPCH timeslots and codes (10.3.6.94)	
-Dynamic SF Usage	False
-First individual timeslot info (10.3.6.37)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps
-Timeslot number	12
-TFCI existence	True
-Midamble shift and burst type (10.3.6.41)	
-CHOICE *TDD option*	3.84 Mcps
-CHOICE *Burst Type*	Type 1
-Midamble Allocation Mode	Default
-Midamble configuration burst type 1 and 3	16
-Midamble shift	Not present
-CHOICE *TDD option*	3.84 Mcps
-First timeslot code list	1
-Channelisation code	8/1
-CHOICE *more timeslots*	No more timeslots

Information Element	Value/Remark
Downlink radio resources	
-CHOICE *mode*	TDD
-Downlink information common for all radio links (10.3.6.24)	
-Downlink DPCH info common for all RL (10.3.6.18)	
-Timing indicator	Initialise
-CFN-targetSFN frame offset	Not Present
-Downlink DPCH power control information (10.3.6.23)	
-CHOICE *mode*	TDD
-TPC Step size	1 dB
-CHOICE *mode*	TDD
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps
-TX Diversity mode (10.3.6.86)	None
-Default DPCH Offset Value (10.3.6.16)	0
-Downlink information per radio link list	1
-Downlink information for each radio link (10.3.6.27)	
-CHOICE *mode*	TDD
-Primary CCPCH info (10.3.6.57)	
- CHOICE *mode*	TDD
- CHOICE *TDD option*	3.84 Mcps
- CHOICE *sync case*	Case 2
- Timeslot	2
- Cell parameters ID	20
- SCTD indicator	False
-Downlink DPCH info for each RL (10.3.6.21)	
-CHOICE *mode*	TDD
- DL CCTrCH list	1
-TFCS ID	Not Present
-Time Info (10.3.6.83)	
-Activation Time	T3
-Duration	Infinite
-Common timeslot info	Not Present
- Downlink DPCH timeslots and codes (10.3.6.32)	
- First individual timeslot info (10.3.6.37)	
- Timeslot Number (10.3.6.84)	
- CHOICE *TDD option*	3.84 Mcps
- Timeslot number	5
- TFCI existence	True
- Midamble shift and burst type (10.3.6.41)	
- CHOICE *TDD option*	3.84 Mcps
- CHOICE *Burst Type*	Type 1
- Midamble Allocation Mode	Default
- Midamble configuration burst type 1 and 3	16
- Midamble shift	Not present
- CHOICE *TDD option*	3.84 Mcps
- First timeslot channelisation codes (10.3.6.17)	
- CHOICE *codes representation*	Consecutive codes
- First channelisation code	16/1
- Last channelisation code	16/2
- CHOICE *more timeslots*	No more timeslots
- SCCPCH information for FACH (10.3.6.70)	Not Present

MEASUREMENT REPORT message for Inter frequency test cases

This message is common for all inter frequency TDD test cases in clause 8.7 and is described in Annex I.

8.3.1.2.5 Test requirements

For the test to pass, the total number of successful tests shall be more than [FFS] of the cases.

Note: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in clause F.4.

8.3.2 TDD/FDD Handover

8.3.2.1 Definition and applicability

Handover delay of the UE is defined as the time from the end of the last TTI containing an RRC message implying hard handover to the transmission of the new uplink DPCCH, excluding the RRC procedure delay as defined in [9].

The requirements and this test apply to the UTRA TDD / FDD UE.

8.3.2.2 Minimum requirement

The hard handover delay shall be less than 100 ms in the single carrier case when the cell is known by the UE and the SFN of the target cell does not need to be decoded. The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of [FFS]%.

The normative reference for this requirement is TS 25.123 [2] clauses 5.2 and A.5.2.

8.3.2.3 Test purpose

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL_DCH state.

8.3.2.4 Method of test

8.3.2.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

The test parameters are given in table 8.3.2.1, 8.3.2.2 and 8.3.2.3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G and 2B shall be used. The CPICH_RSCP of the best cell on the unused frequency shall be reported together with Event 2B reporting. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T3 is at least equal to the RRC procedure delay as defined in [16].

Table 8.3.2.1: General test parameters for TDD/FDD handover

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 clause A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	TDD cell
	Neighbour cell		Cell 2	FDD cell
Final condition	Active cell		Cell 2	FDD cell
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	3	Hysteresis parameter for event 2B
Time to Trigger		ms	0	
Absolute threshold used frequency		dBm	-71	Applicable for Event 2B
Threshold non-used frequency		dBm	-80	Applicable for Event 2B
W used frequency			1	Applicable for Event 2B
W non-used frequency			1	Applicable for Event 2B
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 FDD neighbours on Channel 2	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	5	
T2		s	15	
T3		s	5	

Table 8.3.2.2: Cell 1 specific test parameters for TDD/FDD handover

Parameter	**Unit**	**Cell 1**					
DL timeslot number		**0**			**2**		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.		
SCH_t_{offset}	dB	0			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.
$\hat{I}_{or}/I_{oc}$	dB	5	-1		5	-1	
PCCPCH RSCP	dBm	-68	-74		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70					
Propagation Condition		AWGN					
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .							

Table 8.3.2.3: Cell 2 specific test parameters for TDD/FDD handover

Parameter	Unit	Cell 2	
		T1, T2	T3
CPICH_Ec/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	dB	n.a.	Note 1
OCNS_Ec/Ior	dB	-0,941	Note 2
CPICH_RSCP	dBm	-83	-77
$\hat{I}_{or}/I_{oc}$	dB	-3	3
I_{oc}	dBm/3.84 MHz	-70	
Propagation Condition		AWGN	
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}			

8.3.2.4.2 Procedure

1) The RF parameters are set up according to T1.

2) The UE is switched on.

3) A call is set up according to the test procedure specified in TS 34.108 [3] subclause 7.3.4.

[Editor's note: subclause 7.3.4 in TS 34.108 (Message sequence chart for Handover Test procedure) is not yet specified]

4) SS shall transmit a MEASUREMENT CONTROL message.

5) After 5 seconds, the SS shall switch the power settings from T1 to T2.

6) UE shall transmit a MEASUREMENT REPORT message triggered by event 2B.

7) SS shall transmit a PHYSICAL CHANNEL RECONFIGURATION message with activation time at T3.

8) After 15 seconds, the SS shall switch the power settings from T2 to T3

9) UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the UL DCCH of cell 2. If the UE transmits the UL DPCCH to cell 2 less than 100 ms from the beginning of time period T3 then the number of successful tests is increased by one.

10) After 5 seconds, the UE is switched off. Any timing information of cell 2 is deleted in the UE.

11) Repeat step 1-10 [TBD] times.

Specific Message Contents

All messages indicated belowabove shall use the same content as described in the default message content in clause 9 of 34.108 [3] and in Annex A of 34.123-1 [21], with the following exceptions:

MEASUREMENT CONTROL message, event 2B (step 4):

Information Element/Group name	Value/Remark
Message Type (10.2.17)	
UE information elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
Measurement Information elements	
-Measurement Identity	1
-Measurement Command (10.3.7.46)	Modify
-Measurement Reporting Mode (10.3.7.49)	
-Measurement Report Transfer Mode	AM RLC
-Periodical Reporting / Event Trigger Reporting Mode	Event trigger
-Additional measurements list (10.3.7.1)	Not Present
-CHOICE *Measurement type*	Inter-frequency measurement
-Inter-frequency measurement (10.3.7.16)	
-Inter-frequency measurement objects list (10.3.7.13)	Not Present
-Inter-frequency measurement quantity (10.3.7.18)	
-CHOICE *reporting criteria*	Inter-frequency reporting criteria
-Inter-frequency reporting criteria	
-Filter coefficient	0
-CHOICE *mode*	FDD
-Measurement quantity for frequency quality estimate	CPICH RSCP
-Inter-frequency reporting quantity (10.3.7.21)	
-UTRA Carrier RSSI	FALSE
-Frequency quality estimate	FALSE
-Non frequency related cell reporting quantities (10.3.7.5)	
-SFN-SFN observed time difference reporting indicator	Type 1
-Cell synchronisation information reporting indicator	TRUE
-Cell Identity reporting indicator	TRUE
-CHOICE *mode*	FDD
-CPICH Ec/N0 reporting indicator	TRUE
-CPICH RSCP reporting indicator	TRUE
-Pathloss reporting indicator	TRUE
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report cells within monitored set on non-used frequency
-Maximum number of reported cells per reported non-used frequency	1
-Measurement validity (10.3.7.51)	Not Present
-Inter-frequency set update (10.3.7.22)	Not Present
-CHOICE *report criteria*	Inter-frequency measurement reporting criteria
-Inter-frequency measurement reporting criteria (10.3.7.19)	
-Parameters required for each event	1
-Inter-frequency event identity (10.3.7.14)	Event 2B
-Threshold used frequency	-71 dBm
-W used frequency	1
-Hysteresis	0 dB
-Time to trigger	0 ms
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report cells within monitored set on non-used frequency
-Maximum number of reported cells per reported non-used frequency	1
-Parameters required for each non-used frequency	1
-Threshold non-used frequency	-80 dBm
-W non-used frequency	1
Physical channel information elements	
-DPCH compressed mode status info (10.3.6.34)	Not Present

PHYSICAL CHANNEL RECONFIGURATION message (step 7):

Information Element	Value/Remark
Message Type	
UE Information Elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
-Integrity protection mode info	Not Present
-Ciphering mode info	Not Present
-Activation time	At T3
-New U-RNTI	Not Present
-New C-RNTI	Not Present
-RRC State Indicator	CELL_DCH
-UTRAN DRX cycle length coefficient	Not Present
CN Information Elements	
-CN Information info	Not Present
UTRAN mobility information elements	
-URA identity	Not Present
RB information elements	
-Downlink counter synchronisation info	Not Present
-RB with PDCP information list	Not Present
-RB with PDCP information	Not Present
PhyCH information elements	
-Frequency info (10.3.6.36)	
-CHOICE *mode*	FDD
-UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 2
-UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 2
Uplink radio resources	
-Maximum allowed UL TX power	33 dBm
-CHOICE *channel requirement*	Uplink DPCH info
-Uplink DPCH info (10.3.6.88)	
-Uplink DPCH power control info (10.3.6.91)	
-CHOICE *mode*	FDD
-DPCCH power offset	-6dB
- PC Preamble	1 frame
- SRB delay	7 frames
- Power Control Algorithm	Algorithm1
- TPC step size	1dB
-CHOICE *mode*	FDD
-Scrambling code type	Long
-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
Downlink radio resources	
-CHOICE *mode*	FDD
-Downlink PDSCH information	Not Present
-Downlink information common for all radio links (10.3.6.24)	
-Downlink DPCH info common for all RL (10.3.6.18)	
-Timing indicator	Initialise
-CFN-targetSFN frame offset	Not Present
-Downlink DPCH power control information (10.3.6.23)	
-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	Flexible
-TFCI existence	TRUE
-CHOICE *SF*	Not Present
-Number of bits for Pilot bits(SF=128,256)	Not Present
-CHOICE *mode*	FDD
-DPCH compressed mode info (10.3.6.33)	Not Present (Note 1)

Information Element	Value/Remark
-TX Diversity mode (10.3.6.86)	None
-SSDT information (10.3.6.77)	Not Present
-Default DPCH Offset Value (10.3.6.16)	0
-Downlink information per radio link list	1
-Downlink information for each radio link (10.3.6.27)	
-CHOICE *mode*	FDD
-Primary CPICH info (10.3.6.60)	
-Primary scrambling code	350
-PDSCH with SHO DCH info (10.3.6.47)	Not Present
-PDSCH code mapping (10.3.6.43)	Not Present
-Downlink DPCH info for each RL (10.3.6.21)	
-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	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 (10.3.6.70)	Not Present
Note 1: IE “DPCH compressed mode info” is not needed as default values are applied that have previously been received in RADIO BEARER SETUP or RRC CONNECTION SETUP	

MEASUREMENT REPORT message for Inter frequency test cases

This message is common for all inter frequency FDD test cases in clause 8.7 and is described in Annex I.

8.3.2.5 Test requirements

For the test to pass, the total number of successful tests shall be more than [FFS] of the cases.

Note: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in clause F.4.

Next Changed Section

Annex I (normative): Default Message Contents

This Annex contains the default values of common messages, other than those described in TS 34.108. The messages are primarily concerning the RRM test cases in clause 8 and unless indicated otherwise in specific test cases, shall be transmitted and checked by the system simulator. The necessary messages are listed in alphabetical order.

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

Contents of MEASUREMENT REPORT message for Intra frequency test cases

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 list	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is present
- Cell synchronisation information	
- CHOICE mode	TDD
- OFF	Checked that this IE is present
- CHOICE mode	TDD
- Cell Parameters ID	4
- Primary CCPCH RSCP	Checked that this IE is present
- Pathloss	Checked that this IE is present
- Timeslot ISCP	Checked that this IE is present
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 MEASUREMENT REPORT message for Inter frequency TDD test cases

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	
- Inter-frequency measured results list	
- UTRA Carrier RSSI	Checked that this IE is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is present
- Cell synchronisation information	
- CHOICE mode	TDD
- OFF	Checked that this IE is present
- CHOICE mode	TDD
- Cell Parameters ID	4
- Primary CCCPCH RSCP	Checked that this IE is present
- Pathloss	Checked that this IE is present
- Timeslot ISCP	Checked that this IE is present
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 MEASUREMENT REPORT message for Inter frequency FDD test cases

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	
- Inter-frequency measured results list	
- UTRA Carrier RSSI	Checked that this IE is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is present
- Cell synchronisation information	
-Tm	Checked that this IE is present
- OFF	Checked that this IE is present
- CHOICE mode	FDD
- Primary CPICH info	Checked that this IE is present
- Primary scrambling code	150
- CPICH Ec/N0	Checked that this IE is present
- CPICH RSCP	Checked that this IE is present
- Pathloss	Checked that this IE is present
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 MEASUREMENT REPORT message for inter – RAT test cases

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	
- Inter-RAT measured results list	
- CHOICE system	GSM
- Measured GSM cells	Checked that this IE is present
- GSM carrier RSSI	Checked that this IE is present
- Pathloss	Checked that this IE is present
- Observed time difference to GSM cell	Checked that this IE is present
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

Annex ~~I~~J (informative): Change history

Meeting -1st-Level	Doc-1st-Level	CR	Rev	Subject	Cat	Version -Current	Version -New	Doc-2nd-Level
TP-08				Approval of the specification		2.0.0	3.0.0	
TP-09	TP-000134	001		Corrections to EVM and PCDE formulae (B.2.7.1, B2.7.2)	F	3.0.0	3.1.0	T1-000150
TP-10	TP-000217	002		Update of 34.122 according to RAN#9-approved CRs to 25.102	F	3.1.0	3.2.0	T1-000256
TP-10	TP-000217	003		Update according to former CRs to 25.102	F	3.1.0	3.2.0	T1-000257
TP-10	TP-000217	004		editorial corrections for: Global In-Channel TX- Test	D	3.1.0	3.2.0	T1-000259
TP-10	TP-000217	005		Handling of measurement uncertainties in UE conformance testing (TDD)	F	3.1.0	3.2.0	T1-000262
TP-10	TP-000217	006		Uplink Power control	F	3.1.0	3.2.0	T1-000258
TP-10	TP-000217	007		UE maximum output power multicode	F	3.1.0	3.2.0	T1-000260
TP-10	TP-000217	008		Out-of-synchronisation handling of output power	F	3.1.0	3.2.0	T1-000261
TP-11	TP-010020	009		Test tolerance for 5.7.1 TDD EVM	F	3.2.0	3.3.0	T1-010048
TP-11	TP-010020	010		Test tolerance for 5.7.2 TDD PCDE	F	3.2.0	3.3.0	T1-010049
TP-11	TP-010020	011		Test tolerance for 5.2 Maximum Output Power test case	F	3.2.0	3.3.0	T1-010050
TP-11	TP-010020	012		Test tolerance for 5.3 Frequency Stability	F	3.2.0	3.3.0	T1-010051
TP-11	TP-010020	013		Test tolerance for 5.4.2 Minimum Transmit Output Power	F	3.2.0	3.3.0	T1-010052
TP-11	TP-010020	014		Test Tolerance for 5.4.3 Transmit OFF power	F	3.2.0	3.3.0	T1-010053
TP-11	TP-010020	015		Test tolerance for 5.4.5 Out-of-synchronisation handling of output power	F	3.2.0	3.3.0	T1-010054
TP-11	TP-010020	016		Test tolerance for 5.5.1 Occupied Bandwidth	F	3.2.0	3.3.0	T1-010055
TP-11	TP-010020	017		Test tolerance for 5.5.2.1 Spectrum Emission Mask	F	3.2.0	3.3.0	T1-010056
TP-11	TP-010020	018		Test tolerance for 5.5.2.2 ACLR test case	F	3.2.0	3.3.0	T1-010057
TP-11	TP-010020	019		Test Tolerance for 5.5.3 Spurious emissions	F	3.2.0	3.3.0	T1-010058
TP-11	TP-010020	020		Test Tolerance for 5.6 Transmit Intermodulation	F	3.2.0	3.3.0	T1-010059
TP-11	TP-010020	021		Test Tolerance for 6.2 Reference Sensitivity Level	F	3.2.0	3.3.0	T1-010060
TP-11	TP-010020	022		Test Tolerance for 6.4 Adjacent Channel Selectivity	F	3.2.0	3.3.0	T1-010061
TP-11	TP-010020	023		Test tolerances to 6.5 Blocking Characteristics	F	3.2.0	3.3.0	T1-010062
TP-11	TP-010020	024		Test tolerances to 6.6 Spurious Response	F	3.2.0	3.3.0	T1-010063

TP-11	TP-010020	025		Test tolerances to 6.7 Intermodulation Characteristics	F	3.2.0	3.3.0	T1-010064
TP-11	TP-010020	026		Test Tolerance for 6.5 RX Spurious Emissions	F	3.2.0	3.3.0	T1-010065
TP-11	TP-010020	027		Test tolerance for Annex F in TS34.122	F	3.2.0	3.3.0	T1-010068
TP-11	TP-010020	028		Correction concerning the coexistence of TDD and FDD in the same band	F	3.2.0	3.3.0	T1-010045
TP-11	TP-010020	029		Clarification of the mentioned parameter alpha	F	3.2.0	3.3.0	T1-010046
TP-11	TP-010020	030		Correction concerning the channel number calculation	F	3.2.0	3.3.0	T1-010047
TP-11	TP-010020	031		Correction concerning UE maximum output power classes	F	3.2.0	3.3.0	T1-010066
TP-11	TP-010020	032		Correction of Out-of-Sync criteria	F	3.2.0	3.3.0	T1-010067
TP-12	TP-010120	033		CR:New Power Classes require new test tolerances	F	3.3.0	3.4.0	T1-010154
TP-12	TP-010120	034		CR:Test tolerances for Output Power Dynamic	F	3.3.0	3.4.0	T1-010155
TP-13	TP-010185	036		Replacement of Conformance requirements by Minimum requirements	F	3.4.0	3.5.0	T1-010345
TP-13	TP-010185	037		Deletion of the test: Demodulation of BCH in Block STTD mode	F	3.4.0	3.5.0	T1-010344
TP-13	TP-010185	038		Test conditions	F	3.4.0	3.5.0	T1-010347
TP-13	TP-010185	039		Completion of test procedures & test system uncertainties	F	3.4.0	3.5.0	T1-010349
TP-13	TP-010185	040		Maximum Test System Uncertainty for transmitter tests	F	3.4.0	3.5.0	T1-010351
TP-13	TP-010185	041		Correction of Out-of-synchronisation test	F	3.4.0	3.5.0	T1-010353
TP-13	TP-010185	042		UE power classes	F	3.4.0	3.5.0	T1-010354
TP-13	TP-010185	043		Correction of frequency range for receiver spurious emission requirements	F	3.4.0	3.5.0	T1-010365
TP-14	TP-010260	052		Clarification of AWGN definition	F	3.5.0	3.6.0	T1-010502
TP-14	TP-010260	053		RX spurious emissions	F	3.5.0	3.6.0	T1-010503
TP-14	TP-010260	054		Correction of Spurious emissions	F	3.5.0	3.6.0	T1-010504
TP-14	TP-010260	055		Power and ACLR definition corrections	F	3.5.0	3.6.0	T1-010507
TP-14	TP-010260	056		Out of synchronisation handling	F	3.5.0	3.6.0	T1-010509
TP-14	TP-010260	057		Clarification in Spectrum emission mask section	F	3.5.0	3.6.0	T1-010511
TP-14	TP-010260	058		Changes to blocking characteristics and spurious response test cases	F	3.5.0	3.6.0	T1-010513
TP-14	TP-010260	059		maximum output power for mulicode transimission	F	3.5.0	3.6.0	T1-010515
TP-14	TP-010260	060		BER/BLER testing based on statistical approach	F	3.5.0	3.6.0	T1-010518
TP-15	TP-020040	070		Corrections to various reference to tables in the document.	F	3.6.0	3.7.0	T1-020150
TP-15	TP-020040	071		Maintenance of Annex B	F	3.6.0	3.7.0	T1-020151
TP-15	TP-020040	072		Power Control in the Downlink	F	3.6.0	3.7.0	T1-020152
TP-15	TP-020040	073		Uplink Power Control Performance Test	F	3.6.0	3.7.0	T1-020153
TP-15	TP-020040	074		Replacement of Block STTD by Space Code Transmit Diversity (SCTD)	F	3.6.0	3.7.0	T1-020154
TP-15	TP-020040	075		New RRM Section Headings	F	3.6.0	3.7.0	T1-020155
TP-15	TP-020040	076		Cell Re-selection in idle mode test cases	F	3.6.0	3.7.0	T1-020156
TP-15	TP-020040	077		Statistical testing of RRM delay performance	F	3.6.0	3.7.0	T1-020157
TP-16	TP-020140	086		Cell Re-selection in CELL_PCH test case Rel99	F	3.7.0	3.8.0	T1-020229
TP-16	TP-020140	087		Cell Re-selection in URA_PCH test case Rel99	F	3.7.0	3.8.0	T1-020230
TP-16	TP-020140	088		TDD/TDD Intra-frequency Handover R99	F	3.7.0	3.8.0	T1-020255
TP-16	TP-020140	089		TDD/TDD Inter-frequency Handover R99	F	3.7.0	3.8.0	T1-020257
TP-16	TP-020140	090		TDD/FDD Handover R99	F	3.7.0	3.8.0	T1-020259
TP-16	TP-020140	091		PCCPCH Measurement Performance R99	F	3.7.0	3.8.0	T1-020261
TP-16	TP-020140	092		Corrections to TDD/TDD Cell Re-selection in CELL_FACH state R99	F	3.7.0	3.8.0	T1-020263
TP-16	TP-020140	093		Power Control in the Downlink for HCR Rel99	F	3.7.0	3.8.0	T1-020424

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CR-Form-v7

CHANGE REQUEST

⌘ **34.122** **CR** **105** ⌘ **rev** **-** ⌘ Current version: **4.4.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Message Content for TDD Handover Test Cases
Source:	⌘	T1-RF
Work item code:	⌘	TEI
Date:	⌘	29/07/2002
Category:	⌘	**A**
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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Messaging content missing for TDD/TDD handover test cases.
Summary of change:	⌘	Added messaging content for TDD/TDD handover test cases.
Consequences if not approved:	⌘	Test case would be incomplete.

Clauses affected:	⌘	8.3.1, new Annex I

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.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.

8.3.1 TDD/TDD Handover for 3,84 Mcps Option

8.3.1.1 Handover to intra-frequency cell

8.3.1.1.1 Definition and applicability

Handover delay of the UE is defined as the time from the end of the last TTI containing an RRC message implying hard handover to the transmission of the new uplink DPCH, excluding the RRC procedure delay as defined in [9].

The requirements and this test apply to the UTRA TDD UE.

8.3.1.1.2 Minimum requirement

The hard handover delay shall be less than 40 ms in the single carrier case when the cell is known by the UE and the SFN of the target cell does not need to be decoded. The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of [FFS]%.

The normative reference for this requirement is TS 25.123 [2] clauses 5.1.2 and A.5.1.1.

8.3.1.1.3 Test purpose

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the single carrier case.

8.3.1.1.4 Method of test

8.3.1.1.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

The test parameters are given in table 8.3.1.1.1 and 8.3.1.1.2. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T3 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table 8.3.1.1.1: General test parameters for Handover to intra-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 clause A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 2	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1	
T1		s	10	
T2		s	10	
T3		s	10	

Table 8.3.1.1.2: Cell specific test parameters for Handover to intra-frequency cell

Parameter	**Unit**	**Cell 1**						**Cell 2**					
DL timeslot number		**0**			**4**			**0**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.			-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.			-9			n.a.		
SCH_t_{offset}	dB	0			n.a.			5			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.	n.a.			n.a.		Note 1
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.	n.a.	-3,12		n.a.		Note 2
$\hat{I}_{or}/I_{oc}$	dB	1						-Inf.	3		-Inf.		3
PCCPCH RSCP	dBm	-72			n.a.			-Inf.	-70		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .													

8.3.1.1.4.2 Procedure

1) The RF parameters are set up according to T1.

2) The UE is switched on.

3) A call is set up according to the test procedure specified in TS 34.108 [3] subclause 7.3.4.

[Editor's note: subclause 7.3.4 in TS 34.108 (Message sequence chart for Handover Test procedure) is not yet specified]

4) SS shall transmit a MEASUREMENT CONTROL message.

5) After 10 seconds, the SS shall switch the power settings from T1 to T2.

6) UE shall transmit a MEASUREMENT REPORT message triggered by event 1G.

7) SS shall transmit a PHYSICAL CHANNEL RECONFIGURATION message with activation time at T3.

8) After 10 seconds, the SS shall switch the power settings from T2 to T3

9) UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the UL DCCH of cell 2. If the UE transmits the UL DPCH to cell 2 less than 40 ms from the beginning of time period T3 then the number of successful tests is increased by one.

10) After 10 seconds, the UE is switched off. Any timing information of cell 2 is deleted in the UE.

11) Repeat step 1-10 [TBD] times.

Specific Message Contents

All messages indicated above shall use the same content as described in the default message content in clause 9 of 34.108 [3] and in Annex A of 34.123-1 [21], with the following exceptions:

MEASUREMENT CONTROL message (step 4):

Information Element/Group name	Value/Remark
Message Type (10.2.17)	
UE information elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
Measurement Information elements	
-Measurement Identity	1
-Measurement Command (10.3.7.46)	Modify
-Measurement Reporting Mode (10.3.7.49)	
-Measurement Report Transfer Mode	AM RLC
-Periodical Reporting / Event Trigger Reporting Mode	Event trigger
-Additional measurements list (10.3.7.1)	Not Present
-CHOICE *Measurement type*	Intra-frequency measurement
-Intra-frequency measurement (10.3.7.36)	
-Intra-frequency measurement objects list (10.3.7.33)	Not Present
-Intra-frequency measurement quantity (10.3.7.38)	
-Filter coefficient (10.3.7.9)	0
-CHOICE *mode*	TDD
-Measurement quantity list	1
-Measurement quantity	Primary CCPCH
-Intra-frequency reporting quantity (10.3.7.41)	
-Reporting quantities for active set cells (10.3.7.5)	
-SFN-SFN observed time difference reporting indicator	No report
-Cell synchronisation information reporting indicator	TRUE (Note 1)
-Cell Identity reporting indicator	TRUE
-CHOICE *mode*	TDD
-Timeslot ISCP reporting indicator	TRUE
-Primary CCPCH RSCP reporting indicator	TRUE
-Pathloss reporting indicator	TRUE
-Reporting quantities for monitored set cells (10.3.7.5)	
-SFN-SFN observed time difference reporting indicator	No report
-Cell synchronisation information reporting indicator	TRUE (Note 1)
-Cell Identity reporting indicator	TRUE
-CHOICE *mode*	TDD
-Timeslot ISCP reporting indicator	TRUE
-Proposed TGSN reporting required	FALSE
-Primary CCPCH RSCP reporting indicator	TRUE
-Pathloss reporting indicator	TRUE
-Reporting quantities for detected set cells (10.3.7.5)	Not Present
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report all active set cells + cells within monitored set on used frequency
-Maximum number of reported cells	2
-Measurement validity (10.3.7.51)	Not Present
-CHOICE *report criteria*	Intra-frequency measurement reporting criteria
-Intra-frequency measurement reporting criteria (10.3.7.39)	
-Parameters required for each event	1
-Intra-frequency event identity	Event 1G
-Triggering condition 2	Not Present
-Reporting Range Constant	Not Present
-Cells forbidden to affect Reporting Range	Not Present
-CHOICE *mode*	TDD
-Primary CCPCH info (10.3.6.57)	
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps
-CHOICE *sync case*	Case 2
-Timeslot	0
-Cell parameters ID	0
-SCTD indicator	FALSE
-W	Not Present
-Hysteresis	0 dB
-Threshold used frequency	Not Present
-Reporting deactivation threshold	Not Present
-Replacement activation threshold	Not Present
-Time to trigger	0 ms

Information Element/Group name	Value/Remark
-Amount of reporting	Infinity
-Reporting interval	0 ms (Note 2)
-Reporting cell status	Not Present
Physical channel information elements	
-DPCH compressed mode status info (10.3.6.34)	Not Present
Note 1: The SFN-CFN observed time difference is calculated from the OFF and Tm parameters contained in the IE "Cell synchronisation information ", TS 25.331, clause 10.3.7.6. According to TS 25.331, 8.6.7.7, this IE is included in MEASUREMENT REPORT if IE "Cell synchronisation information reporting indicator" in IE "Cell reporting quantities" TS 25.331, clause 10.3.7.5 is set to TRUE in MEASUREMENT CONTROL.	
Note 2: Reporting interval = 0 ms means no periodical reporting	

PHYSICAL CHANNEL RECONFIGURATION message (step 7):

Information Element	Value/Remark
Message Type	
UE Information Elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
-Integrity protection mode info	Not Present
-Ciphering mode info	Not Present
-Activation time	At T3
-New U-RNTI	Not Present
-New C-RNTI	Not Present
-RRC State Indicator	CELL_DCH
-UTRAN DRX cycle length coefficient	Not Present
CN Information Elements	
-CN Information info	Not Present
UTRAN mobility information elements	
-URA identity	Not Present
RB information elements	
-Downlink counter synchronisation info	Not Present
-RB with PDCP information list	Not Present
-RB with PDCP information	Not Present
PhyCH information elements	
-Frequency info (10.3.6.36)	
-CHOICE *mode*	TDD
-UARFCN (Nt)	Same UARFCN as used for cell 2
Uplink radio resources	
-Maximum allowed UL TX power	33 dBm
-CHOICE *channel requirement*	Uplink DPCH info
-Uplink DPCH info (10.3.6.88)	
-Uplink DPCH power control info (10.3.6.91)	
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps TDD
-UL Target SIR	Not Present
-CHOICE *UL OL PC info*	Individually signalled
-CHOICE *TDD option*	3.84 Mcps TDD
-Indivdual Timeslot interference info	1
-Individual timeslot interference (10.3.6.38)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps TDD
-Timeslot number	12
-UL Timeslot Interference	-90 dBm
-CHOICE *mode*	TDD
-Uplink timing advance control (10.3.6.96)	
-CHOICE *Timing Advance*	Disabled
-UL CCTrCH list	1
-UL Target SIR	TBD dB
-Time Info (10.3.6.83)	
-Activation Time	T3
-Duration	Infinite
-Common timeslot info	Not Present
-Uplink DPCH timeslots and codes (10.3.6.94)	
-Dynamic SF Usage	False
-First individual timeslot info (10.3.6.37)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps
-Timeslot number	12
-TFCI existence	True
-Midamble shift and burst type (10.3.6.41)	
-Choice *TDD option*	3.84 Mcps
-Choice Burst Type	Type 1
-Midamble Allocation Mode	Default
-Midamble configuration burst type 1 and 3	16
-Midamble shift	Not present
-CHOICE *TDD option*	3.84 Mcps
-First timeslot code list	1
-Channelisation code	8/1
-Choice more timeslots	No more timeslots

Information Element	Value/Remark
Downlink radio resources	
-CHOICE *mode*	TDD
-Downlink information common for all radio links (10.3.6.24)	
-Downlink DPCH info common for all RL (10.3.6.18)	
-Timing indicator	Initialise
-CFN-targetSFN frame offset	Not Present
-Downlink DPCH power control information (10.3.6.23)	
-CHOICE *mode*	TDD
-TPC Step size	1 dB
-CHOICE *mode*	TDD
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps
-TX Diversity mode (10.3.6.86)	None
-Default DPCH Offset Value (10.3.6.16)	0
-Downlink information per radio link list	1
-Downlink information for each radio link (10.3.6.27)	
-CHOICE *mode*	TDD
-Primary CCPCH info (10.3.6.57)	
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps
-CHOICE *sync case*	Case 2
-Timeslot	0
-Cell parameters ID	20
-SCTD indicator	False
-Downlink DPCH info for each RL (10.3.6.21)	
-CHOICE *mode*	TDD
-DL CCTrCH list	1
-TFCS ID	Not Present
-Time Info (10.3.6.83)	
-Activation Time	T3
-Duration	Infinite
-Common timeslot info	Not Present
-Downlink DPCH timeslots and codes (10.3.6.32)	
-First individual timeslot info (10.3.6.37)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps
-Timeslot number	5
-TFCI existence	True
-Midamble shift and burst type (10.3.6.41)	
-CHOICE *TDD option*	3.84 Mcps
-CHOICE *Burst Type*	Type 1
-Midamble Allocation Mode	Default
-Midamble configuration burst type 1 and 3	16
-Midamble shift	Not present
-CHOICE *TDD option*	3.84 Mcps
-First timeslot channelisation codes (10.3.6.17)	
-CHOICE *codes representation*	Consecutive codes
-First channelisation code	16/1
-Last channelisation code	16/2
-CHOICE *more timeslots*	No more timeslots
-SCCPCH information for FACH (10.3.6.70)	Not Present

MEASUREMENT REPORT message for Intra frequency test cases

This message is common for all intra frequency test cases in clause 8.7 and is described in Annex I.

8.3.1.1.5 Test requirements

For the test to pass, the total number of successful tests shall be more than [FFS] of the cases.

Note: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in clause F.4.

8.3.1.2 Handover to inter-frequency cell

8.3.1.2.1 Definition and applicability

Handover delay of the UE is defined as the time from the end of the last TTI containing an RRC message implying hard handover to the transmission of the new uplink DPCH, excluding the RRC procedure delay as defined in [9].

The requirements and this test apply to the UTRA TDD UE.

8.3.1.2.2 Minimum requirement

The hard handover delay shall be less than 40 ms in the dual carrier case when the cell is known by the UE and the SFN of the target cell needs to be decoded. The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of [FFS]%.

The normative reference for this requirement is TS 25.123 [2] clauses 5.1.2 and A.5.1.2.

8.3.1.2.3 Test purpose

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH state in the dual carrier case.

8.3.1.2.4 Method of test

8.3.1.2.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

The test parameters are given in table 8.3.1.2.1 and 8.3.1.2.2. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed time difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time at beginning of T3 with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T3 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table 8.3.1.2.1: General test parameters for Handover to inter-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 clause A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final condition	Active cell		Cell 2	
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	Hysteresis parameter for event 2C
Time to Trigger		ms	0	
Threshold non-used frequency		dBm	-80	Applicable for Event 2C
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T_{SI}		s	1,28	The value shall be used for all cells in the test.
T1		s	10	
T2		s	10	
T3		s	10	

Table 8.3.1.2.2: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Cell 1						Cell 2					
DL timeslot number		**0**			**4**			**2**			**5**		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 2					
PCCPCH_Ec/Ior	dB	-3			n.a.			-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.			-9			n.a.		
SCH_t_{offset}	dB	0			n.a.			5			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.	n.a.			n.a.		Note 1
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.	n.a.	-3,12		n.a.		Note 2
$\hat{I}_{or}/I_{oc}$	dB	1						-Inf.	7		-Inf		7
PCCPCH RSCP	dBm	-72			n.a.			-Inf.	-66		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70											
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .													

8.3.1.2.4.2 Procedure

1) The RF parameters are set up according to T1.

2) The UE is switched on.

3) A call is set up according to the test procedure specified in TS 34.108 [3] subclause 7.3.4.

[Editor's note: subclause 7.3.4 in TS 34.108 (Message sequence chart for Handover Test procedure) is not yet specified]

4) SS shall transmit a MEASUREMENT CONTROL message.

5) After 10 seconds, the SS shall switch the power settings from T1 to T2.

6) UE shall transmit a MEASUREMENT REPORT message triggered by event 2C.

7) SS shall transmit a PHYSICAL CHANNEL RECONFIGURATION message with activation time at T3.

8) After 10 seconds, the SS shall switch the power settings from T2 to T3

9) UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the UL DCCH of cell 2. If the UE transmits the UL DPCH to cell 2 less than 40 ms from the beginning of time period T3 then the number of successful tests is increased by one.

10) After 10 seconds, the UE is switched off. Any timing information of cell 2 is deleted in the UE.

11) Repeat step 1-10 [TBD] times.

Specific Message Contents

All messages indicated above shall use the same content as described in the default message content in clause 9 of 34.108 [3] and in Annex A of 34.123-1 [21], with the following exceptions:

MEASUREMENT CONTROL message, event 2C (step 4):

Information Element/Group name	Value/Remark
Message Type (10.2.17)	
UE information elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
Measurement Information elements	
-Measurement Identity	1
-Measurement Command (10.3.7.46)	Modify
-Measurement Reporting Mode (10.3.7.49)	
-Measurement Report Transfer Mode	AM RLC
-Periodical Reporting / Event Trigger Reporting Mode	Event trigger
-Additional measurements list (10.3.7.1)	Not Present
-CHOICE *Measurement type*	Inter-frequency measurement
-Inter-frequency measurement (10.3.7.16)	
-Inter-frequency measurement objects list (10.3.7.13)	Not Present
-Inter-frequency measurement quantity (10.3.7.18)	
-CHOICE *reporting criteria*	Inter-frequency reporting criteria
-Inter-frequency reporting criteria	
-Filter coefficient	0
-CHOICE *mode*	TDD
-Measurement quantity for frequency quality estimate	Primary CCPCH RSCP
-Inter-frequency reporting quantity (10.3.7.21)	
-UTRA Carrier RSSI	FALSE
-Frequency quality estimate	FALSE
-Non frequency related cell reporting quantities (10.3.7.5)	
-SFN-SFN observed time difference reporting indicator	Type 1
-Cell synchronisation information reporting indicator	TRUE
-Cell Identity reporting indicator	TRUE
-CHOICE *mode*	TDD
-Timeslot ISCP reporting indicator	TRUE
-Proposed TGSN reporting required	FALSE
-Primary CCPCH RSCP reporting indicator	TRUE
-Pathloss reporting indicator	TRUE
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report cells within monitored set on non-used frequency
-Maximum number of reported cells per reported non-used frequency	1
-Measurement validity (10.3.7.51)	Not Present
-Inter-frequency set update (10.3.7.22)	Not Present
-CHOICE *report criteria*	Inter-frequency measurement reporting criteria
-Inter-frequency measurement reporting criteria (10.3.7.19)	
-Parameters required for each event	1
-Inter-frequency event identity (10.3.7.14)	Event 2C
-Threshold used frequency	Not Present
-W used frequency	Not Present
-Hysteresis	0 dB
-Time to trigger	0 ms
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report cells within monitored set on non-used frequency
-Maximum number of reported cells per reported non-used frequency	1
-Parameters required for each non-used frequency	1
-Threshold non-used frequency	-80 dBm
-W non-used frequency	1
Physical channel information elements	
-DPCH compressed mode status info (10.3.6.34)	Not Present

PHYSICAL CHANNEL RECONFIGURATION message (step 7):

Information Element	Value/Remark
Message Type	
UE Information Elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
-Integrity protection mode info	Not Present
-Ciphering mode info	Not Present
-Activation time	At T3
-New U-RNTI	Not Present
-New C-RNTI	Not Present
-RRC State Indicator	CELL_DCH
-UTRAN DRX cycle length coefficient	Not Present
CN Information Elements	
-CN Information info	Not Present
UTRAN mobility information elements	
-URA identity	Not Present
RB information elements	
-Downlink counter synchronisation info	Not Present
-RB with PDCP information list	Not Present
-RB with PDCP information	Not Present
PhyCH information elements	
-Frequency info (10.3.6.36)	
-CHOICE *mode*	TDD
-UARFCN (Nt)	Same UARFCN as used for cell 2
Uplink radio resources	
-Maximum allowed UL TX power	33 dBm
-CHOICE *channel requirement*	Uplink DPCH info
-Uplink DPCH info (10.3.6.88)	
-Uplink DPCH power control info (10.3.6.91)	
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps TDD
-UL Target SIR	Not Present
-CHOICE *UL OL PC info*	Individually signalled
-CHOICE *TDD option*	3.84 Mcps TDD
-Indivdual Timeslot interference info	1
-Individual timeslot interference (10.3.6.38)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps TDD
-Timeslot number	12
- UL Timeslot Interference	-90 dBm
-CHOICE *mode*	TDD
-Uplink timing advance control (10.3.6.96)	
-CHOICE *Timing Advance*	Disabled
-UL CCTrCH list	1
-UL Target SIR	TBD dB
-Time Info (10.3.6.83)	
-Activation Time	T3
-Duration	Infinite
-Common timeslot info	Not Present
-Uplink DPCH timeslots and codes (10.3.6.94)	
-Dynamic SF Usage	False
-First individual timeslot info (10.3.6.37)	
-Timeslot Number (10.3.6.84)	
-CHOICE *TDD option*	3.84 Mcps
-Timeslot number	12
-TFCI existence	True
-Midamble shift and burst type (10.3.6.41)	
-CHOICE *TDD option*	3.84 Mcps
-CHOICE *Burst Type*	Type 1
-Midamble Allocation Mode	Default
-Midamble configuration burst type 1 and 3	16
-Midamble shift	Not present
-CHOICE *TDD option*	3.84 Mcps
-First timeslot code list	1
-Channelisation code	8/1
-CHOICE *more timeslots*	No more timeslots

Information Element	Value/Remark
Downlink radio resources	
-CHOICE *mode*	TDD
-Downlink information common for all radio links (10.3.6.24)	
-Downlink DPCH info common for all RL (10.3.6.18)	
-Timing indicator	Initialise
-CFN-targetSFN frame offset	Not Present
-Downlink DPCH power control information (10.3.6.23)	
-CHOICE *mode*	TDD
-TPC Step size	1 dB
-CHOICE *mode*	TDD
-CHOICE *mode*	TDD
-CHOICE *TDD option*	3.84 Mcps
-TX Diversity mode (10.3.6.86)	None
-Default DPCH Offset Value (10.3.6.16)	0
-Downlink information per radio link list	1
-Downlink information for each radio link (10.3.6.27)	
-CHOICE *mode*	TDD
-Primary CCPCH info (10.3.6.57)	
- CHOICE *mode*	TDD
- CHOICE *TDD option*	3.84 Mcps
- CHOICE *sync case*	Case 2
- Timeslot	2
- Cell parameters ID	20
- SCTD indicator	False
-Downlink DPCH info for each RL (10.3.6.21)	
-CHOICE *mode*	TDD
- DL CCTrCH list	1
-TFCS ID	Not Present
-Time Info (10.3.6.83)	
-Activation Time	T3
-Duration	Infinite
-Common timeslot info	Not Present
- Downlink DPCH timeslots and codes (10.3.6.32)	
- First individual timeslot info (10.3.6.37)	
- Timeslot Number (10.3.6.84)	
- CHOICE *TDD option*	3.84 Mcps
- Timeslot number	5
- TFCI existence	True
- Midamble shift and burst type (10.3.6.41)	
- CHOICE *TDD option*	3.84 Mcps
- CHOICE *Burst Type*	Type 1
- Midamble Allocation Mode	Default
- Midamble configuration burst type 1 and 3	16
- Midamble shift	Not present
- CHOICE *TDD option*	3.84 Mcps
- First timeslot channelisation codes (10.3.6.17)	
- CHOICE *codes representation*	Consecutive codes
- First channelisation code	16/1
- Last channelisation code	16/2
- CHOICE *more timeslots*	No more timeslots
- SCCPCH information for FACH (10.3.6.70)	Not Present

MEASUREMENT REPORT message for Inter frequency test cases

This message is common for all inter frequency TDD test cases in clause 8.7 and is described in Annex I.

8.3.1.2.5 Test requirements

For the test to pass, the total number of successful tests shall be more than [FFS] of the cases.

Note: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in clause F.4.

8.3.2 TDD/FDD Handover for 3,84 Mcps Option

8.3.2.1 Definition and applicability

Handover delay of the UE is defined as the time from the end of the last TTI containing an RRC message implying hard handover to the transmission of the new uplink DPCCH, excluding the RRC procedure delay as defined in [9].

The requirements and this test apply to the UTRA TDD / FDD UE.

8.3.2.2 Minimum requirement

The hard handover delay shall be less than 100 ms in the single carrier case when the cell is known by the UE and the SFN of the target cell does not need to be decoded. The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of [FFS]%.

The normative reference for this requirement is TS 25.123 [2] clauses 5.2 and A.5.2.

8.3.2.3 Test purpose

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL_DCH state.

8.3.2.4 Method of test

8.3.2.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

The test parameters are given in table 8.3.2.1, 8.3.2.2 and 8.3.2.3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G and 2B shall be used. The CPICH_RSCP of the best cell on the unused frequency shall be reported together with Event 2B reporting. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T3 is at least equal to the RRC procedure delay as defined in [16].

Table 8.3.2.1: General test parameters for TDD/FDD handover

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 clause A.2.2
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	TDD cell
	Neighbour cell		Cell 2	FDD cell
Final condition	Active cell		Cell 2	FDD cell
HCS			Not used	
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	3	Hysteresis parameter for event 2B
Time to Trigger		ms	0	
Absolute threshold used frequency		dBm	-71	Applicable for Event 2B
Threshold non-used frequency		dBm	-80	Applicable for Event 2B
W used frequency			1	Applicable for Event 2B
W non-used frequency			1	Applicable for Event 2B
Filter coefficient			0	
Monitored cell list size			6 TDD neighbours on Channel 1 6 FDD neighbours on Channel 2	
T_{SI}		s	1.28	The value shall be used for all cells in the test.
T1		s	5	
T2		s	15	
T3		s	5	

Table 8.3.2.2: Cell 1 specific test parameters for TDD/FDD handover

Parameter	**Unit**	**Cell 1**					
DL timeslot number		**0**			**2**		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1					
PCCPCH_Ec/Ior	dB	-3			n.a.		
SCH_Ec/Ior	dB	-9			n.a.		
SCH_t_{offset}	dB	0			n.a.		
DPCH_Ec/Ior	dB	n.a.			Note 1		n.a.
OCNS_Ec/Ior	dB	-3,12			Note 2		n.a.
$\hat{I}_{or}/I_{oc}$	dB	5	-1		5	-1	
PCCPCH RSCP	dBm	-68	-74		n.a.		
I_{oc}	dBm/ 3,84 MHz	-70					
Propagation Condition		AWGN					
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Ior .							

Table 8.3.2.3: Cell 2 specific test parameters for TDD/FDD handover

Parameter	Unit	Cell 2	
		T1, T2	T3
CPICH_Ec/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	dB	n.a.	Note 1
OCNS_Ec/Ior	dB	-0,941	Note 2
CPICH_RSCP	dBm	-83	-77
$\hat{I}_{or}/I_{oc}$	dB	-3	3
I_{oc}	dBm/3.84 MHz	-70	
Propagation Condition		AWGN	
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}			

8.3.2.4.2 Procedure

1) The RF parameters are set up according to T1.

2) The UE is switched on.

3) A call is set up according to the test procedure specified in TS 34.108 [3] subclause 7.3.4.

[Editor's note: subclause 7.3.4 in TS 34.108 (Message sequence chart for Handover Test procedure) is not yet specified]

4) SS shall transmit a MEASUREMENT CONTROL message.

5) After 5 seconds, the SS shall switch the power settings from T1 to T2.

6) UE shall transmit a MEASUREMENT REPORT message triggered by event 2B.

7) SS shall transmit a PHYSICAL CHANNEL RECONFIGURATION message with activation time at T3.

8) After 15 seconds, the SS shall switch the power settings from T2 to T3

9) UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the UL DCCH of cell 2. If the UE transmits the UL DPCCH to cell 2 less than 100 ms from the beginning of time period T3 then the number of successful tests is increased by one.

10) After 5 seconds, the UE is switched off. Any timing information of cell 2 is deleted in the UE.

11) Repeat step 1-10 [TBD] times.

Specific Message Contents

All messages indicated belowabove shall use the same content as described in the default message content in clause 9 of 34.108 [3] and in Annex A of 34.123-1 [21], with the following exceptions:

MEASUREMENT CONTROL message, event 2B (step 4):

Information Element/Group name	Value/Remark
Message Type (10.2.17)	
UE information elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
Measurement Information elements	
-Measurement Identity	1
-Measurement Command (10.3.7.46)	Modify
-Measurement Reporting Mode (10.3.7.49)	
-Measurement Report Transfer Mode	AM RLC
-Periodical Reporting / Event Trigger Reporting Mode	Event trigger
-Additional measurements list (10.3.7.1)	Not Present
-CHOICE *Measurement type*	Inter-frequency measurement
-Inter-frequency measurement (10.3.7.16)	
-Inter-frequency measurement objects list (10.3.7.13)	Not Present
-Inter-frequency measurement quantity (10.3.7.18)	
-CHOICE *reporting criteria*	Inter-frequency reporting criteria
-Inter-frequency reporting criteria	
-Filter coefficient	0
-CHOICE *mode*	FDD
-Measurement quantity for frequency quality estimate	CPICH RSCP
-Inter-frequency reporting quantity (10.3.7.21)	
-UTRA Carrier RSSI	FALSE
-Frequency quality estimate	FALSE
-Non frequency related cell reporting quantities (10.3.7.5)	
-SFN-SFN observed time difference reporting indicator	Type 1
-Cell synchronisation information reporting indicator	TRUE
-Cell Identity reporting indicator	TRUE
-CHOICE *mode*	FDD
-CPICH Ec/N0 reporting indicator	TRUE
-CPICH RSCP reporting indicator	TRUE
-Pathloss reporting indicator	TRUE
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report cells within monitored set on non-used frequency
-Maximum number of reported cells per reported non-used frequency	1
-Measurement validity (10.3.7.51)	Not Present
-Inter-frequency set update (10.3.7.22)	Not Present
-CHOICE *report criteria*	Inter-frequency measurement reporting criteria
-Inter-frequency measurement reporting criteria (10.3.7.19)	
-Parameters required for each event	1
-Inter-frequency event identity (10.3.7.14)	Event 2B
-Threshold used frequency	-71 dBm
-W used frequency	1
-Hysteresis	0 dB
-Time to trigger	0 ms
-Reporting cell status (10.3.7.61)	
-CHOICE *reported cell*	Report cells within monitored set on non-used frequency
-Maximum number of reported cells per reported non-used frequency	1
-Parameters required for each non-used frequency	1
-Threshold non-used frequency	-80 dBm
-W non-used frequency	1
Physical channel information elements	
-DPCH compressed mode status info (10.3.6.34)	Not Present

PHYSICAL CHANNEL RECONFIGURATION message (step 7):

Information Element	Value/Remark
Message Type	
UE Information Elements	
-RRC transaction identifier	0
-Integrity check info	Not Present
-Integrity protection mode info	Not Present
-Ciphering mode info	Not Present
-Activation time	At T3
-New U-RNTI	Not Present
-New C-RNTI	Not Present
-RRC State Indicator	CELL_DCH
-UTRAN DRX cycle length coefficient	Not Present
CN Information Elements	
-CN Information info	Not Present
UTRAN mobility information elements	
-URA identity	Not Present
RB information elements	
-Downlink counter synchronisation info	Not Present
-RB with PDCP information list	Not Present
-RB with PDCP information	Not Present
PhyCH information elements	
-Frequency info (10.3.6.36)	
-CHOICE *mode*	FDD
-UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 2
-UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 2
Uplink radio resources	
-Maximum allowed UL TX power	33 dBm
-CHOICE *channel requirement*	Uplink DPCH info
-Uplink DPCH info (10.3.6.88)	
-Uplink DPCH power control info (10.3.6.91)	
-CHOICE *mode*	FDD
-DPCCH power offset	-6dB
- PC Preamble	1 frame
- SRB delay	7 frames
- Power Control Algorithm	Algorithm1
- TPC step size	1dB
-CHOICE *mode*	FDD
-Scrambling code type	Long
-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
Downlink radio resources	
-CHOICE *mode*	FDD
-Downlink PDSCH information	Not Present
-Downlink information common for all radio links (10.3.6.24)	
-Downlink DPCH info common for all RL (10.3.6.18)	
-Timing indicator	Initialise
-CFN-targetSFN frame offset	Not Present
-Downlink DPCH power control information (10.3.6.23)	
-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	Flexible
-TFCI existence	TRUE
-CHOICE *SF*	Not Present
-Number of bits for Pilot bits(SF=128,256)	Not Present
-CHOICE *mode*	FDD
-DPCH compressed mode info (10.3.6.33)	Not Present (Note 1)

Information Element	Value/Remark
-TX Diversity mode (10.3.6.86)	None
-SSDT information (10.3.6.77)	Not Present
-Default DPCH Offset Value (10.3.6.16)	0
-Downlink information per radio link list	1
-Downlink information for each radio link (10.3.6.27)	
-CHOICE *mode*	FDD
-Primary CPICH info (10.3.6.60)	
-Primary scrambling code	350
-PDSCH with SHO DCH info (10.3.6.47)	Not Present
-PDSCH code mapping (10.3.6.43)	Not Present
-Downlink DPCH info for each RL (10.3.6.21)	
-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	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 (10.3.6.70)	Not Present
Note 1: IE “DPCH compressed mode info” is not needed as default values are applied that have previously been received in RADIO BEARER SETUP or RRC CONNECTION SETUP	

MEASUREMENT REPORT message for Inter frequency test cases

This message is common for all inter frequency FDD test cases in clause 8.7 and is described in Annex I.

8.3.2.5 Test requirements

For the test to pass, the total number of successful tests shall be more than [FFS] of the cases.

Note: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in clause F.4.

Next Changed Section

Annex I (normative): Default Message Contents

This Annex contains the default values of common messages, other than those described in TS 34.108. The messages are primarily concerning the RRM test cases in clause 8 and unless indicated otherwise in specific test cases, shall be transmitted and checked by the system simulator. The necessary messages are listed in alphabetical order.

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

Contents of MEASUREMENT REPORT message for Intra frequency 3,84 Mcps option TDD test cases

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 list	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is present
- Cell synchronisation information	
- CHOICE mode	TDD
- OFF	Checked that this IE is present
- CHOICE mode	TDD
- Cell Parameters ID	4
- Primary CCPCH RSCP	Checked that this IE is present
- Pathloss	Checked that this IE is present
- Timeslot ISCP	Checked that this IE is present
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 MEASUREMENT REPORT message for Inter frequency 3,84 Mcps option TDD test cases

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	
- Inter-frequency measured results list	
- UTRA Carrier RSSI	Checked that this IE is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is present
- Cell synchronisation information	
- CHOICE mode	TDD
- OFF	Checked that this IE is present
- CHOICE mode	TDD
- Cell Parameters ID	4
- Primary CCCPCH RSCP	Checked that this IE is present
- Pathloss	Checked that this IE is present
- Timeslot ISCP	Checked that this IE is present
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 MEASUREMENT REPORT message for Inter frequency FDD test cases

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	
- Inter-frequency measured results list	
- UTRA Carrier RSSI	Checked that this IE is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is present
- Cell synchronisation information	
-Tm	Checked that this IE is present
- OFF	Checked that this IE is present
- CHOICE mode	FDD
- Primary CPICH info	Checked that this IE is present
- Primary scrambling code	150
- CPICH Ec/N0	Checked that this IE is present
- CPICH RSCP	Checked that this IE is present
- Pathloss	Checked that this IE is present
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 MEASUREMENT REPORT message for inter – RAT test cases

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	
- Inter-RAT measured results list	
- CHOICE system	GSM
- Measured GSM cells	Checked that this IE is present
- GSM carrier RSSI	Checked that this IE is present
- Pathloss	Checked that this IE is present
- Observed time difference to GSM cell	Checked that this IE is present
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

Annex ~~I~~J (informative): Change history

Meeting -1st-Level	Doc-1st-Level	CR	Rev	Subject	Cat	Version -Current	Version -New	Doc-2nd-Level
TP-08				Approval of the specification		2.0.0	3.0.0	
TP-09	TP-000134	001		Corrections to EVM and PCDE formulae (B.2.7.1, B2.7.2)	F	3.0.0	3.1.0	T1-000150
TP-10	TP-000217	002		Update of 34.122 according to RAN#9-approved CRs to 25.102	F	3.1.0	3.2.0	T1-000256
TP-10	TP-000217	003		Update according to former CRs to 25.102	F	3.1.0	3.2.0	T1-000257
TP-10	TP-000217	004		editorial corrections for: Global In-Channel TX- Test	D	3.1.0	3.2.0	T1-000259
TP-10	TP-000217	005		Handling of measurement uncertainties in UE conformance testing (TDD)	F	3.1.0	3.2.0	T1-000262
TP-10	TP-000217	006		Uplink Power control	F	3.1.0	3.2.0	T1-000258
TP-10	TP-000217	007		UE maximum output power multicode	F	3.1.0	3.2.0	T1-000260
TP-10	TP-000217	008		Out-of-synchronisation handling of output power	F	3.1.0	3.2.0	T1-000261
TP-11	TP-010020	009		Test tolerance for 5.7.1 TDD EVM	F	3.2.0	3.3.0	T1-010048
TP-11	TP-010020	010		Test tolerance for 5.7.2 TDD PCDE	F	3.2.0	3.3.0	T1-010049
TP-11	TP-010020	011		Test tolerance for 5.2 Maximum Output Power test case	F	3.2.0	3.3.0	T1-010050
TP-11	TP-010020	012		Test tolerance for 5.3 Frequency Stability	F	3.2.0	3.3.0	T1-010051
TP-11	TP-010020	013		Test tolerance for 5.4.2 Minimum Transmit Output Power	F	3.2.0	3.3.0	T1-010052
TP-11	TP-010020	014		Test Tolerance for 5.4.3 Transmit OFF power	F	3.2.0	3.3.0	T1-010053
TP-11	TP-010020	015		Test tolerance for 5.4.5 Out-of-synchronisation handling of output power	F	3.2.0	3.3.0	T1-010054
TP-11	TP-010020	016		Test tolerance for 5.5.1 Occupied Bandwidth	F	3.2.0	3.3.0	T1-010055
TP-11	TP-010020	017		Test tolerance for 5.5.2.1 Spectrum Emission Mask	F	3.2.0	3.3.0	T1-010056
TP-11	TP-010020	018		Test tolerance for 5.5.2.2 ACLR test case	F	3.2.0	3.3.0	T1-010057
TP-11	TP-010020	019		Test Tolerance for 5.5.3 Spurious emissions	F	3.2.0	3.3.0	T1-010058
TP-11	TP-010020	020		Test Tolerance for 5.6 Transmit Intermodulation	F	3.2.0	3.3.0	T1-010059
TP-11	TP-010020	021		Test Tolerance for 6.2 Reference Sensitivity Level	F	3.2.0	3.3.0	T1-010060
TP-11	TP-010020	022		Test Tolerance for 6.4 Adjacent Channel Selectivity	F	3.2.0	3.3.0	T1-010061
TP-11	TP-010020	023		Test tolerances to 6.5 Blocking Characteristics	F	3.2.0	3.3.0	T1-010062
TP-11	TP-010020	024		Test tolerances to 6.6 Spurious Response	F	3.2.0	3.3.0	T1-010063

TP-11	TP-010020	025		Test tolerances to 6.7 Intermodulation Characteristics	F	3.2.0	3.3.0	T1-010064
TP-11	TP-010020	026		Test Tolerance for 6.5 RX Spurious Emissions	F	3.2.0	3.3.0	T1-010065
TP-11	TP-010020	027		Test tolerance for Annex F in TS34.122	F	3.2.0	3.3.0	T1-010068
TP-11	TP-010020	028		Correction concerning the coexistence of TDD and FDD in the same band	F	3.2.0	3.3.0	T1-010045
TP-11	TP-010020	029		Clarification of the mentioned parameter alpha	F	3.2.0	3.3.0	T1-010046
TP-11	TP-010020	030		Correction concerning the channel number calculation	F	3.2.0	3.3.0	T1-010047
TP-11	TP-010020	031		Correction concerning UE maximum output power classes	F	3.2.0	3.3.0	T1-010066
TP-11	TP-010020	032		Correction of Out-of-Sync criteria	F	3.2.0	3.3.0	T1-010067
TP-12	TP-010120	033		CR:New Power Classes require new test tolerances	F	3.3.0	3.4.0	T1-010154
TP-12	TP-010120	034		CR:Test tolerances for Output Power Dynamic	F	3.3.0	3.4.0	T1-010155
TP-13	TP-010185	036		Replacement of Conformance requirements by Minimum requirements	F	3.4.0	3.5.0	T1-010345
TP-13	TP-010185	037		Deletion of the test: Demodulation of BCH in Block STTD mode	F	3.4.0	3.5.0	T1-010344
TP-13	TP-010185	038		Test conditions	F	3.4.0	3.5.0	T1-010347
TP-13	TP-010185	039		Completion of test procedures & test system uncertainties	F	3.4.0	3.5.0	T1-010349
TP-13	TP-010185	040		Maximum Test System Uncertainty for transmitter tests	F	3.4.0	3.5.0	T1-010351
TP-13	TP-010185	041		Correction of Out-of-synchronisation test	F	3.4.0	3.5.0	T1-010353
TP-13	TP-010185	042		UE power classes	F	3.4.0	3.5.0	T1-010354
TP-13	TP-010185	043		Correction of frequency range for receiver spurious emission requirements	F	3.4.0	3.5.0	T1-010365
TP-14	TP-010260	052		Clarification of AWGN definition	F	3.5.0	3.6.0	T1-010502
TP-14	TP-010260	053		RX spurious emissions	F	3.5.0	3.6.0	T1-010503
TP-14	TP-010260	054		Correction of Spurious emissions	F	3.5.0	3.6.0	T1-010504
TP-14	TP-010260	055		Power and ACLR definition corrections	F	3.5.0	3.6.0	T1-010507
TP-14	TP-010260	056		Out of synchronisation handling	F	3.5.0	3.6.0	T1-010509
TP-14	TP-010260	057		Clarification in Spectrum emission mask section	F	3.5.0	3.6.0	T1-010511
TP-14	TP-010260	058		Changes to blocking characteristics and spurious response test cases	F	3.5.0	3.6.0	T1-010513
TP-14	TP-010260	059		maximum output power for mulicode transimission	F	3.5.0	3.6.0	T1-010515
TP-14	TP-010260	060		BER/BLER testing based on statistical approach	F	3.5.0	3.6.0	T1-010518
TP-15	TP-020040	070		Corrections to various reference to tables in the document.	F	3.6.0	3.7.0	T1-020150
TP-15	TP-020040	071		Maintenance of Annex B	F	3.6.0	3.7.0	T1-020151
TP-15	TP-020040	072		Power Control in the Downlink	F	3.6.0	3.7.0	T1-020152
TP-15	TP-020040	073		Uplink Power Control Performance Test	F	3.6.0	3.7.0	T1-020153
TP-15	TP-020040	074		Replacement of Block STTD by Space Code Transmit Diversity (SCTD)	F	3.6.0	3.7.0	T1-020154
TP-15	TP-020040	075		New RRM Section Headings	F	3.6.0	3.7.0	T1-020155
TP-15	TP-020040	076		Cell Re-selection in idle mode test cases	F	3.6.0	3.7.0	T1-020156
TP-15	TP-020040	077		Statistical testing of RRM delay performance	F	3.6.0	3.7.0	T1-020157
TP-16	TP-020140	086		Cell Re-selection in CELL_PCH test case Rel99	F	3.7.0	3.8.0	T1-020229
TP-16	TP-020140	087		Cell Re-selection in URA_PCH test case Rel99	F	3.7.0	3.8.0	T1-020230
TP-16	TP-020140	088		TDD/TDD Intra-frequency Handover R99	F	3.7.0	3.8.0	T1-020255
TP-16	TP-020140	089		TDD/TDD Inter-frequency Handover R99	F	3.7.0	3.8.0	T1-020257
TP-16	TP-020140	090		TDD/FDD Handover R99	F	3.7.0	3.8.0	T1-020259
TP-16	TP-020140	091		PCCPCH Measurement Performance R99	F	3.7.0	3.8.0	T1-020261
TP-16	TP-020140	092		Corrections to TDD/TDD Cell Re-selection in CELL_FACH state R99	F	3.7.0	3.8.0	T1-020263
TP-16	TP-020140	093		Power Control in the Downlink for HCR Rel99	F	3.7.0	3.8.0	T1-020424

3GPP TSG-T1 Meeting #16
Yokohama, Japan, 2nd August 2002

T1-020487

CR-Form-v7

CHANGE REQUEST

⌘ **34.122** **CR** **106** ⌘ **rev** **-** ⌘ Current version: **3.8.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	General corrections for power definitions and test procedures.
Source:	⌘	T1/RF
Work item code:	⌘	-
Date:	⌘	29 July 2002
Category:	⌘	**F**
Release:	⌘	R99

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)*
Rel-6	*(Release 6)*

Reason for change: ⌘
- Power related terms and definitions changed in TS 25.102 (R4-020690 to TS 25.102)
- Incomplete test procedures.

Summary of change: ⌘

Correction of power related terms and definitions in definitions and test procedures according to the changes by R4-020690 to TS 25.102, text alignment to TS 25.102.

- Definitions and equations included in section 3
- Section 5.4.2 Minimum output power:
  - UE setup to minimum output power was missing, inserted
- Section 5.5.2.2 Adjacent Channel Leakage power Ratio (ACLR)
  - Test was to be perfomed at low frequency only, additional step for to cover low, mid and high frequency added
- Section 6.4 Adjacent Channel Selectivity (ACS)
  - Table reference for signal setup was missing, added
- Section 6.5. Blocking Characteristics
  - In-band blocking requirements are only tested for mid range frequency, corrected
  - RF-parameter setting completed
  - Out of band blocking exceptions are explicitly recorded for spurious response test
- Section 6.6. Spurious Response
  - Test procedure corrected
- Section 6.7 Intermodulation Characteristics
  - Square brackets removed, wanted signal setup added
- Section 6.8 Spurious Emissions
  - RF parameters added
- Annex D.2.2 Multi-path fading propagation conditions

		o Changes in the wording needed.
Consequences if not approved:	⌘	Ambiguities between core and test specification, incomplete test cases.

Clauses affected:	⌘	3.1, 3.2, 3.3, 5.2.1, 5.2.4.2, 5.4.1, 5.4.2.1, 5.4.2.4.2, 5.4.3.1, 5.5.2, 5.5.2.1.1, 5.5.2.1.2, 5.5.2.1.4.2, 5.5.2.1.5, 5.5.2.2.1, 5.5.2.2.2, 5.5.2.2.4.2, 5.6.1, 6.2.1, 6.3.1, 6.4.1, 6.4.2, 6.4.4.1, 6.4.5, 6.5.2, 6.5.4.2, 6.5.5, 6.6.2, 6.6.4.2, 6.6.5, 6.7.2, 6.7.4.2., 6.7.5, 6.8.4.1, Annex D.2.2			
		Y	**N**		
Other specs Affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.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.

3.1 Definitions

For the purpose of the present document, the following definition applies:

~~**Average power:** *[TBD]*~~

Power Spectral Density: The units of Power Spectral Density (PSD) are extensively used in this document. PSD is a function of power versus frequency and when integrated across a given bandwidth, the function represents the mean power in such a bandwidth. When the mean power is normalised to (divided by) the chip-rate it represents the mean energy per chip. Some signals are directly defined in terms of energy per chip, (DPCH_Ec, Ec, and P-CCPCH_Ec) and others defined in terms of PSD (Io, Ioc, Ior and $\hat{I}$or). There also exist quantities that are a ratio of energy per chip to PSD (DPCH_Ec/Ior, Ec/Ior etc.). This is the common practice of relating energy magnitudes in communication systems.
It can be seen that if both energy magnitudes in the ratio are divided by time, the ratio is converted from an energy ratio to a power ratio, which is more useful from a measurement point of view. It follows that an energy per chip of X dBm/3.84 MHz can be expressed as a mean power per chip of X dBm. Similarly, a signal PSD of Y dBm/3.84 MHz can be expressed as a signal power of Y dBm.

Maximum Output Power: This is a measure of the maximum power the UE can transmit (i.e. the actual power as would be measured assuming no measurement error) in a bandwidth of at least (1+ α) times the chip rate of the radio access mode. The period of measurement shall be a transmit timeslot excluding the guard period.

Mean Power: When applied to a CDMA modulated signal this is the power (transmitted or received) in a bandwidth of at least (1+ α) times the chip rate of the radio access mode. The period of measurement shall be a transmit timeslot excluding the guard period unless otherwise stated.

Output power: The mean power of the UE delivered to a load with resistance equal to the nominal load impedance of the transmitter.

RRC Filtered Mean Power: The mean power as measured through a root raised cosine filter with roll-off factor α and a bandwidth equal to the chip rate of the radio access mode.

Nominal Maximum Output Power: This is the nominal power defined by the UE power class. The period of measurement shall be a transmit timeslot excluding the guard period.

Received Signal Code Power (RSCP): Given only signal power is received, the RRC filtered mean power of the received signal after despreading and combining.

Interference Signal Code Power (ISCP): Given only interference power is received, the RRC filtered mean power of the received signal after despreading to the code and combining. Equivalent to the RSCP value but now only interference is received instead of signal

NOTE 1: The RRC filtered mean power of a perfectly modulated CDMA signal is 0.246 dB lower than the mean power of the same signal.

NOTE 2: The roll-off factor α is defined in section 6.8.1 of [1].

3.2 Abbreviations

For the purpose of the present document, the following abbreviations apply.

ACLR	Adjacent Channel Leakage power Ratio
ACS	Adjacent Channel Selectivity
AFC	Automatic Frequency Control
ATT	Attenuator
CW	Continuous wave (unmodulated signal)
DPCH	Dedicated physical channel

DPCH_Ec	Average energy per PN chip for DPCH
EVM	Error Vector Magnitude
FFS	For Further Study
Fuw	Frequency of unwanted signal. This is specified in bracket in terms of an absolute frequency(s) or frequency offset from the assigned channel frequency.
HYB	Hybrid
I_{BTS}	Interference signal power level at BTS in dBm, which is broadcasted on BCH
I_{oac}	The power spectral density of the adjacent frequency channel as measured at the UE antenna connector
Ioc	The power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized to the chip rate) of a band limited white noise source (simulating interference from other cells) as measured at the UE antenna connector.
Ior	The total transmit power spectral density (integrated in a bandwidth of (1+α) times the chip rate and normalized to the chip rate) of the downlink signal at the BS antenna connector
$\hat{I}_{or}$	The received power spectral density (integrated in a bandwidth of (1+α) times the chip rate and normalized to the chip rate) of the downlink signal as measured at the UE antenna connector
Iowc	Unwanted signal power level
OBW	Occupied Bandwidth
OCNS	Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control signals on the other orthogonal channels of a downlink.
PCDE	Peak Code Domain Error
PPM	Parts Per Million
PRBS	Pseudo Random Bit Sequence
RRC	Root-Raised Cosine
SCTD	Space Code Transmit Diversity
SIR	Signal to Interference ratio
SS	System Simulator
TBD	To Be Defined
TPC	Transmit Power Control
TS	Time Slot

3.3 Equations

For the purpose of the present document, the following additional equations apply:

~~I_{BTS}~~	~~Interference signal power level at BTS in dBm, which is broadcasted on BCH~~
~~I_{oac}~~	~~The power spectral density of the adjacent frequency channel as measured at the UE antenna connector~~.
$\frac{DPCH\_Ec}{I_{or}}$	The ratio of the average energy per PN chip of the DPCH to the total transmit power spectral density of the downlink at the BS antenna connector
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	The ratio of the sum of DPCH_Ec for one service in case of multicode to the total transmit power spectral density of the downlink at the BS antenna connector

---NEXT SECTION---

5.2 User Equipment maximum output power

5.2.1 Definition and applicability

The nominal maximum output power and its tolerance are defined according to the Power Class of the UE.

~~The nominal **output power** of the UE is the broadband transmit power when averaged (in the sense of thermal power) over the useful part of the TS at the maximum power control setting delivered in to a load with resistance equal to the nominal load impedance.~~

The requirements in this test apply to all UTRA – TDD- UEs

Notes copied from TS 25.102 clause 6.2.1:

NOTE 1: For multi-code operation thenominal maximum output power will be reduced by the difference of peak to average ratio between single and multi-code transmission.

NOTE 2: The tolerance allowed for the nominal maximum power applies even at the multi-code transmission mode

NOTE 3: For UE using directive antennas for transmission, a class dependent limit will be placed on the maximum EIRP (Equivalent Isotropic Radiated Power).

5.2.2 Minimum Requirements

The error of the UE maximum output power shall not exceed the tolerance shown in tables 5.2.2 a and b for single and multi-code.

Table 5.2.2.a: Maximum Output Power single code

Power Class	Nominal maximum output power	Tolerance
2	+24 dBm	+1dB/-3dB
3	+21 dBm	+2dB/-2dB

Table 5.2.2.b: Maximum Output Power multi code

Power Class	Nominal maximum output power	Tolerance
2	21 dBm (note)	+1dB/-3dB
3	18 dBm (note)	+2dB/-2dB
NOTE: These figures are not mentioned in 25.102. Instead there is a note, saying: "For multi-code operation the maximum output power will be reduced by the difference of peak to average ratio between single and multi-code transmission." The figures are calculated from maximum output power single code (table 5.2.2.a) and UL multicode reference measurement channel (12,2 kbit/s) (annex C.2.2.) containing two code signals with equal level.		

The normative reference for this requirement is TS 25.102 clause 6.2.

5.2.3 Test purpose

For the following reasons:

Limit interference.

Verify that the maximum output power is achievable.

It is the purpose of the test to verify that the UE's maximum output power is within its tolerance limits under all environmental conditions.

5.2.4 Method of test

5.2.4.1 Initial conditions

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.

2) Calls are set up according to the Generic call setup procedure using parameters as specified in tables 5.2.4.a and b.

3) Enter the UE into loopback test mode and start the loopback test.

Table 5.2.4.a: Test parameters for Maximum Output Power single code

Parameter	Value/description
UL Reference measurement channel	12,2kbps, according to annex C.2.1
Uplink Power Control	SS level and signalling values such that UE transmits maximum power.
Data content	real life (sufficient irregular)

Table 5.2.4.b: Test parameters for Maximum Output Power multicode

Parameter	Value/description
Reference measurement channel	Multicode 12,2kbps, according to annex C.2.2
Uplink Power Control	SS level and signalling values such that UE transmits maximum power
Data content	real life (sufficient irregular)

5.2.4.2 Procedure

1) Measure the mean power of the UE output signal.~~Measure thermal power over the useful part of the burst with a measurement bandwidth of at least 5 MHz.~~

2) Run step 1) or RF channels Low / Mid / High.

5.2.5 Test Requirements

The output power, measured in step 2) of clause 5.2.4.2, shall not exceed the prescribed tolerance in table 5.2.5 a and b.

Table 5.2.5.a: Maximum Output Power single code

Power Class	Nominal maximum output power	Tolerance
2	+24 dBm	+1,7 dB / -3,7dB
3	+21 dBm	+2,7 dB / -2,7dB

Table 5.2.5.b: Maximum Output Power multi code

Power Class	Nominal maximum output power	Tolerance
2	21 dBm	+1,7dB / -3,7 dB
3	18 dBm	+2,7dB / -2,7 dB

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F clause F.4.

---NEXT SECTION---

5.4 Output Power Dynamics

Power control is used to limit the interference level.

5.4.1 Uplink power control

Uplink power control is the ability of the UE transmitter to sets its output power in accordance with measured downlink path loss, values determined by higher layer signalling and path loss weighting parameter α as defined in TS 25.331 [9]. The output power is defined as the ~~average~~ RRC filtered mean power of the transmit timeslot~~, and is measured with a filter that has a Root Raised Cosine (RRC) filter response with a roll off α = 0.22 and a bandwidth equal to the chip rate~~.

---NEXT SECTION---

5.4.2 Minimum output power

5.4.2.1 Definition and applicability

The minimum controlled output power of the UE is when the power is set to a minimum value. The minimum output power is defined as the mean power in one time slot excluding the guard period

The normative requirements of this test apply to all types of UTRA- UE.

5.4.2.2 Minimum Requirements

The minimum output power shall be lower than or equal to –44 dBm

The normative reference for this requirement is TS 25.102 [1] clause 6.4.5.1.

5.4.2.3 Test purpose

The test purpose is to verify the ability of the UE to reduce its output power to a specified value.

5.4.2.4 Method of test

5.4.2.4.1 Initial conditions

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.
2) A call is set up according to the Generic call setup procedure using parameters as specified in table E.3.1.2.
3) Enter the UE into loopback test mode and start the loopback test.

5.4.2.4.2 Procedure

1) ~~1)~~ Configure the UE transmitter to enable power control steps of size 1 dB.
2) Set and send Down power control commands to the UE. The sequence shall be sufficiently long so that the UE output signal reached its minimum power.
2) Measure the mean power of the UE output signal ~~over the useful part of the active time slot~~ according to annex B.

NOTE: Annex B returns the power in the decision points (displayed as reference power and power offset). This is equivalent to thermal power at the air-interface. Insofar 5.4.2 minimum output power is consistent with 5.2 maximum output power.

3) Configure the UE transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat step 2).
4) Run step 2) for RF channels Low Mid and High.

5.4.2.5 Test requirements

For all measurements, the minimum output power derived in step 3) and 4) of 5.4.2.4.2 shall be below –43 dBm.

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

5.4.3 Transmit OFF power

5.4.3.1 Definition and applicability

Transmit OFF power is defined as the RRC filtered mean ~~average~~ power measured over one chip when the transmitter is off. The transmit OFF power state is when the UE does not transmit.

The requirements of this test apply to all types of UTRA-UE.

5.4.3.2 Minimum Requirements

The transmit OFF power shall be below −65 dBm.

The normative reference for this requirement is TS 25.102 clause 6.5.1.

5.4.3.3 Test purpose

Refer clause 5.4.4.3.

5.4.3.4 Method of test

Refer clause 5.4.4.4

5.4.3.5 Test requirements

The transmit OFF power shall be below −63,5 dBm.

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4

---NEXT SECTION---

5.5.2 Out of band emission

Out of band emissions are unwanted emissions immediately outside the nominal channel resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission limit is specified in terms of a spectrum emission mask and adjacent channel leakage power ratio (ACLR).

5.5.2.1 Spectrum emission mask

5.5.2.1.1 Definition and applicability

The spectrum emission mask of the UE is a requirement that applies to frequencies which are between 2,5 MHz and 12,5MHz on ~~to~~ both sides of the UE centre carrier frequency. The out of channel emission is specified relative to the RRC filtered mean power of the UE carrier~~output power in a 3,84 MHz bandwidth~~.

The requirements of this test apply to all types of UTRA-UE.

5.5.2.1.2 Minimum Requirements

The power of any UE emission shall not exceed the levels specified in table 5.5.2.1.2.

The normative reference for this requirement is TS 25.102 clause 6.6.2.1.1

Table 5.5.2.1.2: Spectrum Emission Mask Requirement

∆f in MHz (note 1)	Minimum requirement	Measurement bandwidth
2.5 - 3.5	$\left\{-35-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	30 kHz (note 2)
3.5 - 7.5	$\left\{-35-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	1 MHz (note 3)
7.5 - 8.5	$\left\{-39-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	1 MHz (note 3)
8.5 - 12.5	-49 dBc	1 MHz (note 3)
Note 1: ∆f is the separation between the carrier frequency and the centre of the measuring filter Note 2: The first and last measurement position with a 30 kHz filter is at ∆f equals to 2.515 MHz and 3.485 MHz. Note 3: The first and last measurement position with a 1 MHz filter is at ∆f equals to 4 MHz and 12 MHz. As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.~~.~~		
The lower limit shall be –50dBm/3.84 MHz or the minimum requirement presented in this table which ever is the higher.		

5.5.2.1.3 Test purpose

This test supplements Occupied Bandwidth (verifying the spectral concentration of the UE's emissions) and Adjacent Channel Leakage Ratio (simulating the perception of other UTRA receivers) in a system independent way. It is the purpose of this test to limit interferences to other systems (wideband or narrowband).

5.5.2.1.4 Method of test

5.5.2.1.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.

2) A call is set up according to the generic call setup procedure using parameters as specified in table E.3.1.2.

3) Enter the UE into loopback test mode and start the loopback test.

5.5.2.1.4.2 Procedure

1) Measure the power of the transmitted signal with a measurement filter of bandwidths according to table 5.5.2.1.2. The characteristic of the filter shall be approximately Gaussian (typical spectrum analyzer filter). The center frequency of the filter shall be stepped in contiguous steps according to table 5.5.2.1.2. The step duration shall be sufficient slow to capture the active TS. The measured power shall be recorded for each step.

2) Measure the RRC filtered mean ~~wanted output~~ power centered on the assigned channel frequency according to annex B.

3) Display the results of 1) in dBc with respect to 2).

5.5.2.1.5 Test requirements

The result 5.5.2.1.4.2 step 3) shall fulfil the requirements of table 5.5.2.1.5.

Table 5.5.2.1.5: Spectrum Emission Mask Requirement

Δf in MHz(note 1)	Minimum requirement	Measurement bandwidth
2.5 - 3.5	$\left\{-33.5-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	30 kHz (note 2)
3.5 - 7.5	$\left\{-33.5-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	1 MHz (note 3)
7.5 - 8.5	$\left\{-37.5-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	1 MHz (note 3)
8.5 - 12.5	-47.5 dBc	1 MHz (note 3)
Note 1: Δf is the separation between the carrier frequency and the centre of the measuring filter. Note 2: The first and last measurement position with a 30 kHz filter is at Δf equals to 2.515 MHz and 3.485 MHz. Note 3: The first and last measurement position with a 1 MHz filter is at Δf equals to 4 MHz and 12 MHz. As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth..		
The lower limit shall be –48.5dBm/3.84 MHz or the minimum requirement presented in this table which ever is the higher.		

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

5.5.2.2 Adjacent Channel Leakage power Ratio (ACLR)

5.5.2.2.1 Definition and applicability

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the RRC filtered mean ~~avarage~~ power centered on the assigned channel frequency to the RRC filtered mean ~~average~~ power centered on an adjacent channel frequency~~. In both cases the power is measured with a filter that has a Root Raised Cosine (RRC) filter response with roll-off α = 0,22 and a bandwidth equal to the chip rate.~~

The requirements in this clause shall apply to all types of UTRA-UE.

5.5.2.2.2 Minimum Requirements

If the adjacent channel RRC filtered mean power is greater than –50dBm then the ACLR shall be higher than the value specified in table 5.5.2.2.2.

The normative reference for this requirement is TS 25.102 [1] clause 6.6.2.2.1

Table 5.5.2.2.2: UE ACLR

Power Class	Adjacent channel	ACLR limit
2, 3	UE-channel ± 5 MHz	33 dB
2, 3	UE-Channel ± 10 MHz	43 dB

5.5.2.2.3 Test purpose

The test purpose is to verify the ability of the UE to limit the interference produced by the transmitted signal to other UTRA receivers operating at the first or second adjacent RF channel.

5.5.2.2.4 Method of test

5.5.2.2.4.1 Initial conditions

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.
2) A call is set up according to the generic call setup procedure using parameters as specified in table E.3.1.2.
3) Enter the UE into loopback test mode and start the loopback test.

5.5.2.2.4.2 Procedure

1) Measure the RRC filtered mean ~~average~~ power centered on the assigned channel frequency. ~~of the active timeslot using the method in annex B.~~
2) Average over TBD time slots.
3) Measure the RRC filtered mean power centered on the first lower adjacent channel frequency. ~~over the useful part of the active TS with a measurement filter that has a RRC filter response with a roll-off α = 0,22 and a bandwidth equal to the chip rate.~~
4) Average over TBD time slots.
5) Calculate the ACLR by

   Power acc. to 2) / Power acc. to 4).

6) ~~6)~~ Repeat steps 3), 4) and 5) for the second lower adjacent RF channel (center frequency 10 MHz below the assigned channel frequency of the transmitted signal) and also for the first and second upper adjacent RF channel (center frequency 5 MHz and 10 MHz, respectively).

7) Run step 1) to 6) for RF channels Low/Mid/High.

5.5.2.2.5 Test requirements

The ACLR calculated in steps 5) and 6) of clause 5.5.2.2.4.2 shall be equal or greater than the limits given in table 5.5.2.2.5.

Table 5.5.2.2.5: UE ACLR

Power Class	Adjacent channel	ACLR limit
2, 3	UE-channel ± 5 MHz	32.2 dB
2, 3	UE-Channel ± 10 MHz	42.2 dB

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F.

---NEXT SECTION---

5.6 Transmit Intermodulation

5.6.1 Definition and applicability

The transmit intermodulation performance is a measure of the capability of the transmitter to inhibit the generation of signals in its non linear elements caused by the presence of the wanted signal and an interfering signal reaching the transmitter via the antenna.

User Equipment(s) transmitting in close vicinity of each other can produce intermodulation products, which can fall into the UE, or BS receive band as an unwanted interfering signal. The UE intermodulation attenuation is defined by the ratio of the RRC filtered mean ~~output~~ power of the wanted signal to the RRC filtered mean~~output~~ power of the intermodulation product when an interfering CW signal is added at a level below the wanted signal. ~~Both the wanted signal power and the intermodulation product power are measured with a filter response that is root-raised cosine (RRC) with roll-off α=0,22 and with a bandwidth equal to the chip rate.~~

The requirements of this test shall apply for all UTRA-UE.

5.6.2 Minimum Requirements

The requirement of transmitting intermodulation for carrier spacing 5 MHz is prescribed in the table below.

The normative reference for this requirement is TS 25.102 [1] clause 6.7.1

Table 5.6.2: Transmit Intermodulation

Interference Signal Frequency Offset	5MHz	10MHz
Interference Signal Level	-40 dBc	
Interferer Modulation	CW Note: BS Test uses a CDMA modulated signal	
Minimum requirement	-31dBc	-41dBc

5.6.3 Test purpose

User Equipment(s) transmitting in close vicinity of each other can produce intermodulation products, which can fall into other UE, or BS receive band as an unwanted interfering signal.

It is the purpose of this test to limit interferences to the own and other systems due to intermodulation products.

5.6.4 Method of test

5.6.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

1) Connect the SS and the interferer to the UE antenna connector as shown in figure A.2.
2) A call is set up according to the generic call setup procedure using parameters as specified in table E.3.1.2.
3) Enter the UE into loopback test mode and start the loopback test.

Parameters of the interferer according to table 5.6.2.

5.6.4.2 Procedure

1) Measure the unwanted emissions according to 5.6.2. in a carrier offset spacing of 5 MHz and in a frequency range [5 MHz to 12.75 GHz], using an interferer +5MHz offset.

   The frequency occupied by the interferer is excluded from the measurement.

2) Repeat 1) with the other 3 interferer-configurations (-5Mz. +10 MHz, -10 MHz).

3) Measure the wanted power according to annex B.

4) Display 1) and 2) in dBc with respect to 3).

5.6.5 Test requirements

The results in 4) from clause 5.6.4.2 shall not exceed the predescribed values in table 5.6.5.

Table 5.6.5: Transmit Intermodulation

Interference Signal Frequency Offset	5MHz	10MHz
Interference Signal Level	-40 dBc	
Interferer Modulation	CW Note: BS Test uses a CDMA modulated signal	
Minimum requirement	[-31+TT] dBc	[-41+TT] dBc

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

---NEXT SECTION---

6 Receiver Characteristics

6.1 General

Receiving performance test of the UE is implemented during communicating with the SS via air interface. The procedure uses normal call protocol until the UE is communicating on traffic channel basically. (Refer to TS 34.108 [3] Common Test Environments for User Equipment (UE) Conformance Testing.) On the traffic channel, the UE provides special function for testing that is described in Logical Test Interface and the UE is tested using this function. (Refer to TS 34.109 [3] Logical Test Interface (FDD/TDD) Special conformance testing functions.)

Unless otherwise stated the receiver characteristics are specified at the antenna connector of the UE. For UE(s) with an integral antenna only, a reference antenna with a gain of 0 dBi is assumed. UE with an integral antenna may be taken into account by converting these power levels into field strength requirements, assuming a 0 dBi gain antenna. Receiver characteristics for UE(s) with multiple antennas/antenna connectors are for further study.

The UE antenna performance has a significant impact on system performance, and minimum requirements on the antenna efficiency are therefore intended to be included in future versions of the present document. It is recognized that different requirements and test methods are likely to be required for the different types of UE.

All the parameters in clause 6 are defined using the DL reference measurement channel (12.2 kbps) specified in clause C.3.3.

All Bit Error ratio (BER) measurements in clause 6 shall be performed according to the general rules for statistical testing in Annex F.6.

6.2 Reference sensitivity level

6.2.1 Definition and applicability

The reference sensitivity level is the minimum ~~receiver input~~ mean power received ~~measured~~ at the UE antenna connector at which the BER shall~~does~~ not exceed the specific value.

The requirements in this clause shall apply to all types of UTRA UE.

6.2.2 Minimum Requirements

For the DL reference measurement channel 12.2 kBit/s specified in annex C, the BER shall not exceed 0.001 for the parameters specified in table 6.2.2.

Table 6.2.2. Test parameters for reference sensitivity

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	-105	dBm/3,84 MHz

The normative reference for this requirement is TS 25.102 [1] clause 7.3.

6.2.3 Test purpose

The test purpose is to verify the ability of the UE to receive a prescribed test signal at the lower end of the dynamic range under defined conditions (no interference, no multipath propagation) with a BER not exceeding a specified level.

This test is also used as a reference case for other tests to allow the assessment of degradations due to various sources of interference.

6.2.4 Method of test

6.2.4.1 Initial conditions

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.3.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
4) The level of SS output signal measured at the UE antenna connector shall be –105 dBm.

6.2.4.2 Procedure

1) Measure the BER of DCH received from the UE at the SS.

6.2.5 Test requirements

The measured BER, derived in step 1), shall not exceed 0,001 under conditions described in table 6.2.5.

Table 6.2.5: Test parameters for reference sensitivity

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	-104.3	dBm/3,84 MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.3 Maximum Input Level

6.3.1 Definition and applicability

The~~is~~ maximum input level is defined as the maximum mean~~receiver input~~ power received~~, measured~~ at the UE antenna connector, which does not degrade the specified BER performance.

The requirements in this clause shall apply to all types of UTRA UE.

6.3.2 Minimum requirements

The BER shall not exceed 0,001 for the parameters specified in table 6.3.2.

Table 6.3.2: Maximum input level

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	-7	dB
$\hat{I}_{or}$	-25	dBm/3,84 MHz

The reference for this requirement is TS 25.102 [1] clause 7.4.

6.3.3 Test purpose

The test purpose is to verify the ability of the UE to receive a prescribed test signal at the upper end of the dynamic range under defined conditions (no interference, no multipath propagation) with BER not exceeding a specified value.

6.3.4 Method of test

6.3.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.3.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
4) The level of SS output signal measured at the UE antenna connector shall be according to table 6.3.2.

6.3.4.2 Procedure

Measure the BER of DCH received from the UE at the SS.

6.3.5 Test requirements

The measured BER, derived in step 1), shall not exceed 0,001.

6.4 Adjacent Channel Selectivity (ACS)

6.4.1 Definition and applicability

Adjacent Channel Selectivity is a measure of a receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an adjacent channel signal~~,~~ at a given frequency offset from the centre frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receiver filter attenuation on the adjacent channel(s).

The requirements of this test apply to all UTRA UE.

6.4.2 Minimum Requirements

For the UE of power class 2 and 3, the BER shall not exceed 0,001 for parameters specified in table 6.4.2. This test condition is equivalent to the ACS value 33 dB.

Table 6.4.2: Test parameters for Adjacent Channel Selectivity

Parameter	Unit	Level
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	dB	0
$\hat{I}_{or}$	dBm/3,84 MHz	-91
I_{oac} mean power (modulated)	dBm~~/3,84 MHz~~	-52
F_{uw} offset	MHz	+5 or –5

Explanatory note:

Within the reference sensitivity BER= 0.001 corresponds to a testsignal = -105 dBm/3,84 MHz and a noise level -99 dBm /3,84 MHz BW (S/I -6 dB).

Within ACS BER=0.001 is directly verified.

Known from the reference sensitivity, this corresponds to S/I –6dB in the wanted BW.

As a wanted signal of –91 dBm applied, an in-channel-interfering-signal of –85 dBm can be assumed.

Verifying a filter suppression of 33 dB indirectly, an adjacent-channel-interferer of –52 dBm is needed

The normative reference of this requirement is TS 25.102 [1] clause 7.5.

6.4.3 Test purpose

The test purpose is to verify the ability of the UE-receiver to sufficiently suppress the interfering signal in the channel adjacent to the wanted channel.

6.4.4 Method of test

6.4.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

1) Connect the SS and the interferer to the UE antenna connector as shown in figure A.4.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
4) Set the signal generators to produce wanted and interference signals according Table 6.4.2. The interference signal shall be equivalent to a continuously running wideband CDMA signal with one code and chip frequency 3,84 Mchip/s and rolloff 0,22.

6.4.4.2 Procedure

1) Set the interference signal 5 MHz above the assigned channel frequency of the wanted signal.
2) Measure the BER of the wanted signal received from the UE at the SS.
3) Set the interference signal 5 MHz below the assigned channel frequency of the wanted signal and repeat 2).

6.4.5 Test Requirements

The measured BER, derived in step 2), shall not exceed 0,001 under conditions described in table 6.4.5.

Table 6.4.5: Test parameters for Adjacent Channel Selectivity

Parameter	Unit	Level
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	dB	0
$\hat{I}_{or}$	dBm/3,84 MHz	-91
I_{oac} mean power (modulated)	dBm~~/3,84 MHz~~	-52
F_{uw} offset	MHz	+5 or –5

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.5 Blocking Characteristics

6.5.1 Definition and applicability

The blocking characteristics is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occur.

The requirements of this test apply to all UTRA UE.

6.5.2 Minimum Requirements

The BER shall not exceed 0,001 for the parameters specified in table 6.5.2a and table 6.5.2b. For table 6.5.2b up to 24 exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1MHz step size for the interference signal.

The normative reference for this requirement is TS 25.102 clause 7.6.1.

Table 6.5.2a: In-band blocking

~~Parameter~~	~~Offset 1~~	~~Offset 2~~	~~Unit~~
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	~~0~~	~~0~~	~~DB~~
~~$\hat{I}_{or}$~~	~~<REFSENS> + 3 dB~~	~~<REFSENS> + 3 dB~~	~~dBm/3,84 MHz~~
~~$I_{blocking}$ (modulated)~~	~~-56~~	~~-44~~	~~dBm/3,84 MHz~~
~~F_{uw} offset~~	~~±10 or -10~~	~~±15 or -15~~	~~MHz~~

Parameter	**Level**		**Unit**
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	**0**		dB
$\hat{I}_{or}$	-102		dBm/3,84 MHz
$\frac{I_{ouw}\text{ mean power}}{\text{(modulated)}}$	-56 (for $F_{uw\ offset}$ ±10 MHz)	-44 (for $F_{uw\ offset}$ ±15 MHz)	dBm

Table 6.5.2b: Out of band blocking

Parameter	Band 1	Band 2	Band 3	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	0	0	dB
$\hat{I}_{or}$	~~<REFSENS> + 3 dB~~ -102	~~<REFSENS> + 3 dB~~ -102	~~<REFSENS> + 3 dB~~ -102	dBm/3,84 MHz
I_{ouw}~~blocking~~ (CW)	-44	-30	-15	dBm
F_{uw} For operation in frequency bands as definded in clause 4.2(a)	1840 <f <1885 1935 <f <1995 2040 <f <2085	1815 <f <1840 2085 <f <2110	1< f <1815 2110< f <12750	MHz
F_{uw} For operation in frequency bands as definded in clause 4.2(b)	1790 < f < 1835 2005 < f < 2050	1765 < f < 1790 2050 < f < 2075	1 < f < 1765 2075 < f < 12750	MHz
F_{uw} For operation in frequency bands as definded in clause 4.2(c)	1850 < f < 1895 1945 < f < 1990	1825 < f < 1850 1990 < f < 2015	1 < f < 1825 2015 < f < 12750	MHz

NOTE 1: For operation referenced in 4.2(a), from 1885 <f< 1900 MHz, 1920 <f< 1935 MHz, 1995 <f< 2010 MHz and 2025<f< 2040 MHz , the appropriate in-band blocking or adjacent channel selectivity in clause 6.5.2 shall be applied.

NOTE 2: For operation referenced in 4.2(b), from 1835 < f < 1850 MHz and 1990< f < 2005 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 6.5.2 shall be applied.

NOTE 3: For operation referenced in 4.2(c), from 1895 < f < 1910 MHz and 1930< f < 1945 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 6.5.2 shall be applied.

6.5.3 Test purpose

"The test stresses the ability of the UE receiver to withstand high-level interference from unwanted signals at frequency offsets of 10 MHz or more, without undue degradation of its sensitivity."

6.5.4 Method of test

6.5.4.1 Initial conditions

For in-band case:

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

For out-of-band case:

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequency to be tested: 1 arbitrary frequency chosen from the low, mid or high range; see clause G.2.4.

1) Connect the SS and the interfering Signal generator to the UE antenna connector as shown in figure A.5.

2) A call is set up according to the Generic call setup procedure.

3) Enter the UE into loopback test mode and start the loopback test.

6.5.4.2 Procedure

1) The wanted signal frequency channel is set ~~in~~into ~~the middle of the~~ mid range frequency ~~band~~. The wanted signal power level shall be set according to Table 6.5.5a.

2) The interfering Signal Generator is stepped through the frequency range indicated in table 6.5.2.a. with a step size of 1 MHz. The interfering signal level shall be set according to Table 6.5.5a.

3) The interference signal shall be equivalent to a continuously running wideband CDMA signal with one code and chip frequency 3,84 Mchip/s and rolloff 0,22.

4) Measure the BER of the wanted signal received from the UE at the SS for each step of the interferer.

~~5) Repeat the inband blocking for wanted frequency channels low- band and high band~~.

5~~6~~) The wanted signal frequency channel is set ~~into the middle of the band.~~to an arbitrary frequency chosen from the low, mid or high range. The level of the wanted signal shall be set according to Table 6.5.5b

6~~7~~) The interfering Signal Generator is stepped through the frequency range indicated in table 6.5.2.b with a step size of 1 MHz. The interfering signal level shall be set according to Table 6.5.5b

7~~8~~) The interference signal is a CW signal.

8~~9~~) Measure the BER of the wanted signal received from the UE at the SS for each step of the interferer.

9) Record the frequencies for which BER exceed the test requirements in Table 6.5.5b. These frequencies are further proceeding in subclause 6.6 Spurious Response.

NOTE: Due to the large amount of time-consuming BER tests it is recommended to speed up a single BER test by reducing the 0.001-BER confidence level [10 000 bits under test or 10 errors] for screening the critical frequencies. Critical frequencies must be identified using standard BER confidence level. [30 000 bits or 30 errors].

6.5.5 Test requirements

The measured BER, derived in step 4) ~~and 5)~~, shall not exceed 0,001 (without exception) under test conditions described in table 6.5.5a.

The measured BER, derived in step 8~~9~~), shall not exceed 0,001 except for up to 24 different frequencies of the interfering signal under test conditions described in table 6.5.5b.

These frequencies are further processed in clause ~~5~~6.6 Spurious response.

Table 6.5.5a: Test conditions In-band blocking

~~Parameter~~	~~Offset 1~~	~~Offset 2~~	~~Unit~~
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	~~0~~	~~0~~	~~DB~~
~~$\hat{I}_{or}$~~	~~<REFSENS> + 3 dB~~	~~<REFSENS> + 3 dB~~	~~DBm/3,84 MHz~~
~~$I_{blocking}$ (modulated)~~	~~-56~~	~~-44~~	~~DBm/3,84 MHz~~

Parameter	Level		Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0		dB
$\hat{I}_{or}$	-102		dBm/3,84 MHz
I_{ouw} mean power (modulated)	-56 (for $F_{uw\ offset}$ ±10 MHz)	-44 (for $F_{uw\ offset}$ ±15 MHz)	dBm

Table 6.5.5b: Test conditions Out of band blocking

Parameter	Band 1	Band 2	Band 3	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	0	0	DB
$\hat{I}_{or}$	~~<REFSENS> + 3 dB~~ -102	~~<REFSENS> + 3 dB~~ -102	~~<REFSENS> + 3 dB~~ -102	dBm/3,84 MHz
I_{ouw}~~blocking~~ (CW)	-44	-30	-15	DBm

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.6 Spurious Response

6.6.1 Definition and applicability

Spurious response is a measure of the receiver's ability to receive a wanted signal on its assigned channel frequency without exceeding a given degradation due to the presence of an unwanted CW interfering signal at any other frequency at which a response is obtained i.e. for which the blocking limit is not met.

The requirements of this test apply to all types of UTRA for the UE.

6.6.2 Minimum Requirements

The BER shall not exceed 0,001 for the parameters specified in table 6.6.2.

The normative reference for this requirement is TS 25.102 [1] clause 7.7.1

Table 6.6.2: Spurious Response

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	~~<REFSENS> + 3~~ -102	dBm/3,84 MHz
I_{ouw}~~blocking~~ (CW)	-44	dBm
F_{uw}	Spurious response frequencies	MHz

6.6.3 Test purpose

Spurious response frequencies, identified in the blocking test, are measured against a less stringent test requirement. The test stresses the ability of the receiver to withstand high level interference signals without undue degradation of its sensitivity due to the receiver's frequency conversion concept.

6.6.4 Method of test

6.6.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequency to be tested: the same frequency as chosen in subclause 6.5.4.1 for Blocking characteristics out-of-band case.

1) Connect the SS and the unwanted signal to the UE antenna connector as shown in figure A.6.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.

6.6.4.2 Procedure

1) ~~Repeat~~ Set the wanted signal frequency to the frequency used for the out-of-band blocking test~~setting from the blocking test~~. Set the power level of the wanted signal according to table 6.6.2.
2) ~~Repeat the frequency settings of~~ Set the frequency of the interferer signal according the recorded spurious response frequency values obtained from the out-of-band blocking test as described in 6.5.4.2, at which the blocking test failed. Set the power level of the interferer according to table 6.6.5.
3) Measure the BER of DCH received from the UE at the SS. ~~for each of the settings 1) and 2).~~

6.6.5 Test requirements

The measured BER, derived in step 3), shall not exceed 0,001 under. test conditions described in table 6.6.5.

Table 6.6.5: Test Parameters Spurious Response

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	~~<REFSENS> + 3~~ -102	dBm/3,84 MHz
~~I~~$_{blocking}$ ~~I~~$_{ouw}$ (CW)	-44	dBm
F_{uw}	Spurious response frequencies	MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.7 Intermodulation Characteristics

6.7.1 Definition and applicability

Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the receiver to receiver a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal.

The requirements of this test shall apply to all UTRA UE.

6.7.2 Minimum Requirements

The BER shall not exceed 0,001 for the parameters specified in table 6.7.2

The normative reference for this requirement is TS 25.102 [1] clause 7.8.1.

Table 6.7.2: Receive intermodulation characteristics

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
Î$_{or}$~~Wanted Signal Level~~	~~<REFSENS> + 3 dB~~ -102	dBm/3,84 MHz
$I_{ouw1(CW)}$	-46	dBm
I_{ouw2} mean power (modulated)	-46	dBm~~/3,84 MHz~~
F_{uw1} (CW)	~~|±10|~~	MHz
F_{uw2} (Modulated)	~~|±20|~~	MHz

6.7.3 Test purpose

The test stresses the ability of the receiver to withstand two or more high level interference signals without undue degradation of its sensitivity due to the receiver's non-linear elements.

6.7.4 Method of test

6.7.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

1) Connect the SS and the unwanted signals to the UE antenna connector as shown in figure A.7.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.

6.7.4.2 Procedure

1) Set the wanted and interfering signals as indicated in table 6.7.2. with positive offset with respect to the wanted signal.
2) Measure the BER of DCH received from the UE at the SS.
3) Set the interfering signals as indicated in table 6.7.2. with negative offset with respect to the wanted signal and repeat 2).

6.7.5 Test requirements

The measured BER, derived in step 2) and 3), shall not exceed 0,001 under test conditions described in table 6.7.5.

Table 6.7.5: Test parameters Receive intermodulation characteristics

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$ Wanted Signal Level	~~<REFSENS> + 3 dB~~ -102	dBm/3,84 MHz
$I_{ouw1(CW)}$	-46	dBm
I_{ouw2} mean power (modulated)	-46	dBm~~/3,84 MHz~~
F_{uw1} (CW)	~~|±10|~~	MHz
F_{uw2} (Modulated)	~~|±20|~~	MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.8 Spurious Emissions

6.8.1 Definition and applicability

The Spurious Emissions Power is the power of emissions generated or amplified in a receiver that appear at the UE antenna connector.

The requirements of this test are applicable for all UTRA UE.

6.8.2 Minimum Requirements

The power of any spurious emission shall not exceed:

Table 6.8.2: Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	-60 dBm	3,84 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	-47 dBm	1 MHz	

The normative reference for this requirement is TS 25.102 [1] clause 7.9.

6.8.3 Test purpose

The test purpose is to verify the UE's ability to limit interference caused by receiver spurious emissions to the own and the other systems. The test requirements are tighter than in clause 5.5.3 ((TX) Spurious Emissions) because the time of Receive–Only-Operation is generally much longer than RX-TX-Operation.

6.8.4 Method of test

6.8.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: 1 arbitrary frequency selected between low and high range; see clause G.2.4.

1) Connect the measurement equipment to the UE antenna connector according to figure A.8.
2) RF parameters are setup according to table 6.8.4.1~~[TBD]~~.
3) The UE shall be in the CELL_FACH state.
4) The neighbour cell list shall be empty. HCS is not used.
5) The timer T305 shall be set to ∞, so that no cell update is triggered during the measurement.
6) Set Qrxlevmin to –105 dBm.
7) Set UE_TXPWR_MAX_RACH such that Pcompensation =0.
8) Set $S_{intersearch}$, $S_{intrasearch}$ and $Ssearch_{RAT\ m}$ to zero.

Note 1: With the CELL_FACH state (3) in combination with the signalling parameters (4), (5), (6), (7), (8) and the SS level (2) it is ensured that UE continuously receives the S-CCPCH and no cell reselections are performed [see 25.304, subcl. 5.2.3.and 5.2.6]. No transmission of the UE will interfere the measurement.

9) The measurement equipment shall measure power through:
   - a 100 kHz filter with a approximately gaussian filter-characteristic (typical spectrum analyzer); or
   - a 1 MHz filter with a approximately gaussian filter-characteristic (typical spectrum analyzer); or
   - a matched filter with a bandwidth equal to the chip frequency 3,84 Mchip/s and rolloff 0,22.

Table 6.8.4.1: RF parameters for receiver spurious test

Parameter	Unit	Level
PCCPCH_Ec/Ior	dB	-3
SCH_Ec/Ior	dB	-9
$\hat{I}_{or}/I_{oc}$	dB	9
PCCPCH RSCP	dBm	-64

6.8.4.2 Procedure

Measure the power of spurious emissions by covering the frequency ranges of table 6.8.2. Cover the UTRA/TDD and UTRA/FDD UE receive band in contiguous steps of 200 kHz. Cover the other frequency ranges in contiguous steps of 100 kHz. Apply the corresponding filters of table 6.8.2. The step duration shall be sufficient slow to capture intermittent spurious emissions.

6.8.5 Test requirements

The spurious emissions shall be according to table 6.8.5.

Table 6.8.5: Receiver spurious emission test requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	-60 dBm	3,84 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	-47 dBm	1MHz	

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in Annex F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.4.

---NEXT SECTION---

Annex D (normative): Propagation conditions

D.1 Test Environments

Table D.1 details the test services, the information data and the propagation conditions.

Table D.1: Test Environments for UE Performance Specifications

Test Services	Information Data Rate	Static	Multipath Case 1	Multipath Case 2	Multipath Case 3
		Performance metric			
Paging Message			-	-	-
FACH Message			-	-	-
Circuit Switched Services	12.2 kbps	BLER <	BLER <	BLER <	BLER <
	64 kbps	BLER <	BLER <	BLER <	BLER <
	144 kbps	BLER <	BLER <	BLER <	BLER <
	384 kbps	BLER <	BLER <	BLER <	BLER <
	2048 kbps	BLER <	-	-	-
Packet Switched Data	TBD	TBD	TBD	TBD	TBD

D.2 Propagation Conditions

D.2.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multi-paths exist for this propagation model.

D.2.2 Multi-path fading propagation conditions

Table D.2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

Table D.2: Propagation Conditions for Multi path Fading Environments

Case 1, speed 3km/h		Case 2, speed 3 km/h		Case 3, speed 120 km/h		Case 4, speed 3 km/h	
Relative Delay [ns]	Relative Mean ~~Average~~ Power [dB]	Relative Delay [ns]	Relative Mean~~Average~~ Power [dB]	Relative Delay [ns]	~~Average~~ Relative Mean Power [dB]	Relative Delay [ns]	~~Average~~ Relative Mean Power [dB]
0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	976	0
		12000	0	521	-6		
				781	-9		

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CHANGE REQUEST

⌘ **34.122** **CR** **107** ⌘ **rev** **-** ⌘ Current version: **4.4.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	General corrections for power definitions and test procedures.
Source:	⌘	T1/RF
Work item code:	⌘	TEI, LCRTDD
Date:	⌘	29 July 2002
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)
Rel-6 (Release 6)

Reason for change: ⌘
- Power related terms and definitions changed in TS 25.102 (R4-020691 and R4-020693 to TS 25.102)
- 1.28 Mcps TDD spectrum emission mask changed in TS 25.102 (R4-011287 to TS 25.102)
- Completion of incomplete test procedures .

Summary of change: ⌘

Correction and completion of test procedures:
- Definitions and equations included in section 3
- In general, removal of square brackets for 1.28 Mcps TDD
- Section 5.4.2 Minimum output power:
  - UE setup to minimum output power was missing, inserted
- Section 5.5.2.2 Adjacent Channel Leakage power Ratio (ACLR)
  - Test was to be perfomed at low frequency only, additional step for to cover low, mid and high frequency added
- Section 6.4 Adjacent Channel Selectivity (ACS)
  - Table reference for signal setup was missing, added
- Section 6.5. Blocking Characteristics
  - In-band blocking requirements are only tested for mid range frequency, corrected
  - RF-parameter setting completed
  - Out of band blocking exceptions are explicitly recorded for spurious response test
- Section 6.6. Spurious Response
  - Test procedure corrected
- Section 6.7 Intermodulation Characteristics
  - Square brackets removed, wanted signal setup added
- Section 6.8 Spurious Emissions
  - RF parameters added

		- Annex F1.2 Transmitter Test system uncertainties o ACLR 0,8 dB valid for all frequency offsets - Annex F.1.3 Receiver Test system uncertainties o Blocking uncertainties added for 1.28 Mcps TDD option
Consequences if not approved:	⌘	Ambiguities between core and test specification, incomplete test cases.

Clauses affected:	⌘	3.1, 3.2, 3.3, 5.2.1, 5.2.4, 5.2.4.1, 5.2.4.2, 5.4.1, 5.4.1.4.2, 5.4.2.1,5.4.2.2.1, 5.4.2.2.2, 5.4.2.4.2, 5.4.2.5.2, 5.4.3.1, 5.5.2, 5.5.2.1.1.1, 5.5.2.1.1.2, 5.5.2.1.2.1, 5.5.2.1.2.2, 5.5.2.1.4.2, 5.5.2.1.5.1, 5.5.2.1.5.2, 5.5.2.2.1, 5.5.2.2.2.1, 5.5.2.2.2.2, 5.5.2.2.4.2, 5.5.2.5.2, 5.5.3.5.2, 5.6.1, 6.2.1, 6.3.1, 6.4.1, 6.4.2.1, 6.4.2.2, 6.4.4.1, 6.4.5.1, 6.4.5.2, 6.5.2.1, 6.5.2.2, 6.5.4.1, 6.5.4.2, 6.5.5.1, 6.5.5.2, 6.6.2.1, 6.6.2.2, 6.6.4.2, 6.6.5.1, 6.6.5.2, 6.7.2.1, 6.7.2.2, 6.7.4.2., 6.7.5.1, 6.7.5.2, 6.8.4.1, 6.8.5.2, Annex D.2.2.1, Annex D.2.2.2, Annex F.1.2, Annex F.1.3			
		Y	**N**		
Other specs Affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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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.

3 Definitions, abbreviations and equations

For the purposes of the present document, the definitions, symbols, abbreviations and equations used in the present document are listed in TR 21.905 [6] and TR 25.990 [7].

3.1 Definitions

For the purpose of the present document, the following definition applies:

~~**Average power:** *[TBD]*~~

Power Spectral Density: The units of Power Spectral Density (PSD) are extensively used in this document. PSD is a function of power versus frequency and when integrated across a given bandwidth, the function represents the mean power in such a bandwidth. When the mean power is normalised to (divided by) the chip-rate it represents the mean energy per chip. Some signals are directly defined in terms of energy per chip, (DPCH_Ec, Ec, and P-CCPCH_Ec) and others defined in terms of PSD (Io, Ioc, Ior and $\hat{I}$or). There also exist quantities that are a ratio of energy per chip to PSD (DPCH_Ec/Ior, Ec/Ior etc.). This is the common practice of relating energy magnitudes in communication systems.

It can be seen that if both energy magnitudes in the ratio are divided by time, the ratio is converted from an energy ratio to a power ratio, which is more useful from a measurement point of view. It follows that an energy per chip of X dBm/3.84 MHz (3.84 Mcps TDD option) or X dBm/1.28 MHz (1.28 Mcps TDD option) can be expressed as a mean power per chip of X dBm. Similarly, a signal PSD of Y dBm/3.84 MHz (3.84 Mcps TDD option) or Y dBm/1.28 MHz (1.28 Mcps TDD option) can be expressed as a signal power of Y dBm.

Maximum Output Power: This is a measure of the maximum power the UE can transmit (i.e. the actual power as would be measured assuming no measurement error) in a bandwidth of at least (1+ α) times the chip rate of the radio access mode. The period of measurement shall be a transmit timeslot excluding the guard period.

Mean Power: When applied to a CDMA modulated signal this is the power (transmitted or received) in a bandwidth of at least (1+ α) times the chip rate of the radio access mode. The period of measurement shall be a transmit timeslot excluding the guard period unless otherwise stated.

Output power: The mean power of the UE delivered to a load with resistance equal to the nominal load impedance of the transmitter.

RRC Filtered Mean Power: The mean power as measured through a root raised cosine filter with roll-off factor α and a bandwidth equal to the chip rate of the radio access mode.

Nominal Maximum Output Power: This is the nominal power defined by the UE power class. The period of measurement shall be a transmit timeslot excluding the guard period.

Received Signal Code Power (RSCP): Given only signal power is received, the RRC filtered mean power of the received signal after despreading and combining.

Interference Signal Code Power (ISCP): Given only interference power is received, the RRC filtered mean power of the received signal after despreading to the code and combining. Equivalent to the RSCP value but now only interference is received instead of signal.

NOTE 1: The RRC filtered mean power of a perfectly modulated CDMA signal is 0.246 dB lower than the mean power of the same signal.

NOTE 2: The roll-off factor α is defined in section 6.8.1 of [1].

3.2 Abbreviations

For the purpose of the present document, the following abbreviations apply.

ACLR	Adjacent Channel Leakage power Ratio
ACS	Adjacent Channel Selectivity
AFC	Automatic Frequency Control
ATT	Attenuator
CW	Continuous wave (unmodulated signal)
DPCH	Dedicated physical channel
DPCH_Ec	Average energy per PN chip for DPCH
EVM	Error Vector Magnitude
FFS	For Further Study
Fuw	Frequency of unwanted signal. This is specified in bracket in terms of an absolute frequency(s) or frequency offset from the assigned channel frequency.
HYB	Hybrid
I_{BTS}	Interference signal power level at BTS in dBm, which is broadcasted on BCH
I_{oac}	The power spectral density of the adjacent frequency channel as measured at the UE antenna connector.
Ioc	The power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized to the chip rate) of a band limited white noise source (simulating interference from other cells) as measured at the UE antenna connector.
Ior	The total transmit power spectral density (integrated in a bandwidth of (1+α) times the chip rate and normalized to the chip rate) of the downlink signal at the BS antenna connector
$\hat{I}_{or}$	The received power spectral density (integrated in a bandwidth of (1+α) times the chip rate and normalized to the chip rate) of the downlink signal as measured at the UE antenna connector
Iowc	Unwanted signal power level
OBW	Occupied Bandwidth
OCNS	Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control signals on the other orthogonal channels of a downlink.
PCDE	Peak Code Domain Error
PPM	Parts Per Million
PRBS	Pseudo Random Bit Sequence
RRC	Root-Raised Cosine
SCTD	Space Code Transmit Diversity
SIR	Signal to Interference ratio
SS	System Simulator
TBD	To Be Defined
TPC	Transmit Power Control
TS	Time Slot

3.3 Equations

For the purpose of the present document, the following additional equations apply:

~~I_{BTS}~~	~~Interference signal power level at BTS in dBm, which is broadcasted on BCH~~
~~I_{oac}~~	~~The power spectral density of the adjacent frequency channel as measured at the UE antenna connector.~~
$\frac{DPCH\_Ec}{I_{or}}$	The ratio of the average energy per PN chip of the DPCH to the total transmit power spectral density of the downlink at the BS antenna connector
$\frac{\Sigma\ DPCH\_Ec}{I_{or}}$	The ratio of the sum of DPCH_Ec for one service in case of multicode to the total transmit power spectral density of the downlink at the BS antenna connector

---NEXT SECTION---

5.2 User Equipment maximum output power

5.2.1 Definition and applicability

The nomin~~a~~al maximum output power and its tolerance are defined according to the Power Class of the UE.

~~The nominal **output power** of the UE is the broadband transmit power when averaged (in the sense of thermal power) over the useful part of the TS at the maximum power control setting delivered in to a load with resistance equal to the nominal load impedance~~.

The requirements in this test apply to all UTRA – TDD- UEs

Notes copied from TS 25.102 clause 6.2.1:

NOTE 1: For multi-code operation the nominal maximum output power will be reduced by the difference of peak to average ratio between single and multi-code transmission.

NOTE 2: The tolerance allowed for the nominal maximum power applies even at the multi-code transmission mode

NOTE 3: For UE using directive antennas for transmission, a class dependent limit will be placed on the maximum EIRP (Equivalent Isotropic Radiated Power).

5.2.2 Minimum Requirements

The error of the UE maximum output power shall not exceed the tolerance shown in tables 5.2.2 a and b for single and multi-code.

Table 5.2.2.a: Maximum Output Power single code

Power Class	Nominal maximum output power	Tolerance
1	+30 dBm	+1dB/-3dB
2	+24 dBm	+1dB/-3dB
3	+21 dBm	+2dB/-2dB
4	+10 dBm	+4dB/-4dB

Table 5.2.2.b: Maximum Output Power multi code

Power Class	Nominal maximum output power	Tolerance
1	+27 dBm (note)	+1dB/-3dB
2	21 dBm (note)	+1dB/-3dB
3	18 dBm (note)	+2dB/-2dB
4	+7 dBm (note)	+4dB/-4dB
NOTE: These figures are not mentioned in 25.102. Instead there is a note, saying: "For multi-code operation the maximum output power will be reduced by the difference of peak to average ratio between single and multi-code transmission." The figures are calculated from maximum output power single code (table 5.2.2.a) and UL multicode reference measurement channel (12,2 kbit/s) (annex C.2.2.1 for the 3,84 TDD Option and annex C.2.2.2 for the 1,28 Mcps TDD Option, respectively) containing two code signals with equal level.		

The normative reference for this requirement is TS 25.102 [1] clause 6.2.1.

5.2.3 Test purpose

For the following reasons:

Limit interference.

Verify that the maximum output power is achievable.

It is the purpose of the test to verify that the UE's maximum output power is within its tolerance limits under all environmental conditions.

5.2.4 Method of test

~~Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.~~

~~Frequencies to be tested: low range, mid range, high range; see clause G.2.4.~~

5.2.4.1 Initial conditions

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.
2) Calls are set up according to the Generic call setup procedure using parameters as specified in tables 5.2.4.1.1a and b for the 3,84 Mcps TDD Option and in tables 5.2.4.1.2a and b for the ~~3,84~~1,28 Mcps TDD Option, respectively.
3) Enter the UE into loopback test mode and start the loopback test.

5.2.4.1.1 3,84 Mcps TDD Option

Table 5.2.4.1.1a: Test parameters for Maximum Output Power single code (3,84 Mcps TDD Option)

Parameter	Value/description
UL Reference measurement channel	12,2 kbps, according to annex C.2.1.1
Uplink Power Control	SS level and signalling values such that UE transmits maximum power.
Data content	real life (sufficient irregular)

Table 5.2.4.1.1b: Test parameters for Maximum Output Power multicode (3,84 Mcps TDD Option)

Parameter	Value/description
Reference measurement channel	Multicode 12,2 kbps, according to annex C.2.2.1
Uplink Power Control	SS level and signalling values such that UE transmits maximum power
Data content	real life (sufficient irregular)

5.2.4.1.2 1,28 Mcps TDD Option

Table 5.2.4.1.2a: Test parameters for Maximum Output Power single code (1,28 Mcps TDD Option)

Parameter	Value/description
UL Reference measurement channel	12,2 kbps, according to annex C.2.1.2.
Uplink Power Control	SS level and signalling values such that UE transmits maximum power.
Data content	real life (sufficient irregular)

Table 5.2.4.1.2b: Test parameters for Maximum Output Power multicode (1,28 Mcps TDD Option)

Parameter	Value/description
Reference measurement channel	Multicode 12,2 kbps, according to annex C.2.2.2
Uplink Power Control	SS level and signalling values such that UE transmits maximum power
Data content	real life (sufficient irregular)

5.2.4.2 Procedure

1) Measure the mean power of the UE output signal.~~Measure thermal power over the useful part of the burst, with a measurement bandwidth of at least 5 MHz related to 3,84 Mcps TDD Option and with a measurement bandwidth of at least 1,6 MHz in case of 1,28 Mcps TDD Option.~~

2) Run step 1) for RF channels Low / Mid / High.

5.2.5 Test Requirements

The output power, measured in step 2) of clause 5.2.4.2, shall not exceed the prescribed tolerance in table 5.2.5 a and b.

Table 5.2.5.a: Maximum Output Power single code

Power Class	Nominal maximum output power	Tolerance
1	+30 dBm	[+1,7] dB / [-3,7] dB
2	+24 dBm	+1,7 dB / -3,7dB
3	+21 dBm	+2,7 dB / -2,7dB
4	+10 dBm	[+4,7] dB / [-4,7] dB

Table 5.2.5.b: Maximum Output Power multi code

Power Class	Nominal maximum output power	Tolerance
1	27 dBm	+1,7 dB / -3,7 dB
2	21 dBm	+1,7dB / -3,7 dB
3	18 dBm	+2,7dB / -2,7 dB
4	7 dBm	+4,7 dB / -4,7 dB

NOTE 1: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

NOTE 2: Concerning multicode transmission this test applies only for UE power classes 2 and 3. It is intended, that additional test requirements for UE power classes 1 and 4 in this case are part of a later version of the present document.

---**NEXT SECTION**---

5.4 Output Power Dynamics

Power control is used to limit the interference level.

5.4.1 Uplink power control

Uplink power control is the ability of the UE transmitter to sets its output power in accordance with measured downlink path loss, values determined by higher layer signalling and path loss weighting parameter α as defined in TS 25.331 [9]. The output power is defined as the ~~average~~ RRC filtered mean power of the transmit timeslot~~, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0.22$ and a bandwidth equal to the chip rate.~~

---**NEXT SECTION---**

5.4.1.4 Closed loop power control (1,28 Mcps TDD Option)

5.4.1.4.1 Definition and applicability

Closed loop power control in the Uplink is the ability of the UE transmitter to adjust its output power in accordance with one or more TPC commands received in the downlink.

The power control step is the change in the UE transmitter output power in response to a single TPC command, TPC_cmd, arrived at the UE.

5.4.1.4.2 Minimum requirements

The UE transmitter shall have the capability of changing the output power with a step size of 1, 2 and 3 dB according to the value of Δ_{TPC} in the slot immediately after the TPC_cmd can be arrived.

a) The transmitter output power step due to closed loop power control shall be within the range shown in table 5.4.1.4.2a.

b) The transmitter average output power step due to closed loop power control shall be within the range shown in table 5.4.1.4.2b. Here a TPC_cmd group is a set of TPC_cmd values derived from a corresponding sequence of TPC commands of the same duration.

The closed loop power is defined as the relative power differences between ~~averaged~~ RRC filtered mean power of original (reference) timeslot and ~~averaged~~ RRC filtered mean power of the target timeslot without transient duration. ~~They are measured with a filter that has a Root Raised Cosine (RRC) filter response with a roll off α = 0.22 and a bandwidth equal to the chip rate.~~

Table 5.4.1.4.2a: Transmitter power control range

TPC_cmd	Transmitter power control range					
	1 dB step size		2 dB step size		3 dB step size	
	Lower	Upper	Lower	Upper	Lower	Upper
Up	+0,5 dB	+1,5 dB	+1 dB	+3 dB	+1,5 dB	+4,5 dB
Down	-0,5 dB	-1,5 dB	-1 dB	-3 dB	-1,5 dB	-4,5 dB

Table 5.4.1.4.2b: Transmitter average power control range

TPC_cmd group	Transmitter power control range after 10 equal TPC_ cmd groups					
	1 dB step size		2 dB step size		3 dB step size	
	Lower	Upper	Lower	Upper	Lower	Upper
Up	+8 dB	+12 dB	+16 dB	+24 dB	+24 dB	+36 dB
Down	-8 dB	-12 dB	-16 dB	-24 dB	-24 dB	-36 dB

---**NEXT SECTION---**

5.4.2 Minimum output power

5.4.2.1 Definition and applicability

The minimum controlled output power of the UE is when the power is set to a minimum value. The minimum output power is defined as the mean power in one time slot excluding the guard period

The normative requirements of this test apply to all types of UTRA- UE.

5.4.2.2 Minimum Requirements

5.4.2.2.1 3,84Mcps TDD Option

The minimum output power shall be lower than or equal to –44 dBm. ~~measured with a filter that has a root raised cosine (RRC) filter response with a roll-off factor α = 0.22 and a bandwidth equal to the chip rate.~~

The normative reference for this requirement is TS 25.102 [1] clause 6.4.2.1.1.

5.4.2.2.2 1,28Mcps TDD Option

The minimum output power shall be better than–49 dBm. ~~measured with a filter that has a root raised cosine (RRC) filter response with a roll-off factor α = 0.22 and a bandwidth equal to the chip rate.~~

The normative reference for this requirement is TS 25.102 [1] clause 6.4.2.1.2.

5.4.2.3 Test purpose

The test purpose is to verify the ability of the UE to reduce its output power to a specified value.

5.4.2.4 Method of test

5.4.2.4.1 Initial conditions

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.
2) A call is set up according to the Generic call setup procedure using parameters as specified in table E.3.1.2.
3) Enter the UE into loopback test mode and start the loopback test.

5.4.2.4.2 Procedure

1) ~~1)~~ Configure the UE transmitter to enable power control steps of size 1 dB.
2) Set and send Down power control commands to the UE. The sequence shall be sufficiently long so that the UE output signal reached its minimum power.
2) Measure the mean power of the UE output signal ~~over the useful part of the active time slot~~ according to annex B.

NOTE: Annex B returns the power in the decision points (displayed as reference power and power offset). This is equivalent to thermal power at the air-interface. Insofar 5.4.2.2.1 minimum output power for 3,84 Mcps TDD Option and 5.4.2.2.2 minimum output power for 1,28 Mcps TDD Option is consistent with 5.2 maximum output power.

3) Configure the UE transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat step 2).
4) Run step 2) for RF channels Low Mid and High.

5.4.2.5 Test requirements

5.4.2.5.1 3,84 Mcps TDD Option

For all measurements, the minimum output power derived in step 3) and 4) of 5.4.2.4.2 shall be below –43 dBm.

5.4.2.5.2 1,28 Mcps TDD Option

For all measurements, the minimum output power derived in step 3) and 4) of 5.4.2.4.2 shall be below ~~[~~-48~~]~~ dBm.

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

5.4.3 Transmit OFF power

5.4.3.1 Definition and applicability

Transmit OFF power is defined as the RRC filtered mean ~~average~~ power measured over one chip when the transmitter is off. The transmit OFF power state is when the UE does not transmit.

The requirements of this test apply to all types of UTRA-UE.

5.4.3.2 Minimum Requirements

The transmit OFF power shall be below −65 dBm.

The normative reference for this requirement is TS 25.102 clause 6.5.1.

5.4.3.3 Test purpose

Refer clause 5.4.4.3.

5.4.3.4 Method of test

Refer clause 5.4.4.4.

5.4.3.5 Test requirements

The transmit OFF power shall be below −63.5 dBm.

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4

---NEXT SECTION---

5.5.2 Out of band emission

Out of band emissions are unwanted emissions immediately outside the nominal channel resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission limit is specified in terms of a spectrum emission mask and adjacent channel leakage power ratio (ACLR).

5.5.2.1 Spectrum emission mask

5.5.2.1.1 Definition and applicability

5.5.2.1.1.1 3,84 Mcps TDD Option

The spectrum emission mask of the UE is a requirement that applies to frequencies which are between 2,5 MHz and 12,5MHz on~~to~~ both sides of the UE centre carrier frequency. The out of channel emission is specified relative to the RRC filtered mean power of the UE carrier ~~output power in a 3,84 MHz bandwidth~~.

The requirements of this test apply to all types of UTRA-UE.

5.5.2.1.1.2 1,28 Mcps TDD Option

The spectrum emission mask of the UE applies to frequencies, which are between 0,8 MHz and 4,0 MHz on both sides of ~~from a~~ the centre carrier frequency. The out of channel emission is specified relative to the RRC filtered mean power of the UE carrier.~~output power measured in a 1,28 MHz bandwidth~~.

5.5.2.1.2 Minimum Requirements

5.5.2.1.2.1 3,84 Mcps TDD Option

The power of any UE emission shall not exceed the levels specified in table 5.5.2.1.2.1.

The normative reference for this requirement is TS 25.102 clause 6.6.2.1.1.1.

Table 5.5.2.1.2.1: Spectrum Emission Mask Requirement (3,84 Mcps TDD Option)

Δf in MHz (note 1)	Minimum requirement	Measurement bandwidth
2.5 - 3.5	$\left\{-35-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	30 kHz (note 2)
3.5 - 7.5	$\left\{-35-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	1 MHz (note 3)
7.5 - 8.5	$\left\{-39-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	1 MHz (note 3)
8.5 - 12.5	-49 dBc	1 MHz
Note 1: Δf is the separation between the carrier frequency and the centre of the measuring filter. Note 2: The first and last measurement position with a 30 kHz filter is at Δf equals to 2.515 MHz and 3.485 MHz. Note 3: The first and last measurement position with a 1 MHz filter is at Δf equals to 4 MHz and 12 MHz. As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth..		
The lower limit shall be –50dBm/3.84 MHz or the minimum requirement presented in this table which ever is the higher.		

5.5.2.1.2.2 1,28 Mcps TDD Option

The power of any UE emission shall not exceed the levels specified in table 5.5.2.1.2.2.

The normative reference for this requirement is TS 25.102 clause 6.6.2.1.1.2.

Table 5.5.2.1.2.2: Spectrum Emission Mask Requirement (1,28 Mcps TDD Option)

Δf* in MHz	Minimum requirement	Measurement bandwidth
0.8	-35 dBc	30 kHz **
0.8-1.8	$\left\{-35-14\cdot\left(\frac{\Delta f}{MHz}-0.8\right)\right\}dBc$	30 kHz **
1.8-2.4	$\left\{-49-25\cdot\left(\frac{\Delta f}{MHz}-1.8\right)\right\}dBc$	30 kHz **
2.4 – 4.0	-49 dBc	1MHz ***
*	Δf is the separation between the carrier frequency and the centre of the measuring filter.	
**	The first and last measurement position with a 30 kHz filter is at Δf equals to 0.815 MHz and 2.385 MHz.	
***	The first and last measurement position with a 1 MHz filter is at Δf equals to 2.9MHz and 3.5MHz .As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.	
The lower limit shall be –55dBm/1.28 MHz or the minimum requirement presented in this table which ever is the higher.		

~~Frequency offset from carrier Δf~~	~~Minimum requirement~~	~~Measurement bandwidth~~
~~0.8 MHz~~	~~-35 dBc~~	~~30 kHz~~
~~0.8-1.8 MHz~~	~~-35 – 14*(Δf-0.8) dBc~~	~~30 kHz~~
~~1.8-2.4 MHz~~	~~-49 – 25*(Δf-1.8)dBc~~	~~30 kHz~~
~~2.4 – 4.0MHz~~	~~-49 dBc~~	~~1MHz~~

~~NOTE 1: The first and last measurement position with a 30 kHz filter is 0,815 MHz and 2,385 MHz.~~

~~NOTE 2: The first and last measurement position with a 1 MHz filter is 2,9MHz and 3,5MHz.~~

~~NOTE 3: The lower limit shall be –55dBm/1,28 MHz or which ever is the higher.~~

5.5.2.1.3 Test purpose

This test supplements Occupied Bandwidth (verifying the spectral concentration of the UE's emissions) and Adjacent Channel Leakage Ratio (simulating the perception of other UTRA receivers) in a system independent way. It is the purpose of this test to limit interferences to other systems (wideband or narrowband).

5.5.2.1.4 Method of test

5.5.2.1.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.

2) A call is set up according to the generic call setup procedure using parameters as specified in table E.3.1.2.

3) Enter the UE into loopback test mode and start the loopback test.

5.5.2.1.4.2 Procedure

1) Measure the power of the transmitted signal with a measurement filter of bandwidths according to table 5.5.2.1.2.1 for the 3,84 Mcps TDD Option and 5.5.2.1.2.2 for the 1,28 Mcps TDD Option, respectively. The characteristic of the filter shall be approximately Gaussian (typical spectrum analyzer filter). The center

frequency of the filter shall be stepped in contiguous steps according to table 5.5.2.1.2.1 for the 3,84 Mcps TDD Option and 5.5.2.1.2.2 for the 1,28 Mcps TDD Option, respectively. The step duration shall be sufficient slow to capture the active TS. The measured power shall be recorded for each step.

2) Measure the RRC filtered mean ~~wanted output~~ power centered on the assigned channel frequency according to annex B.

3) Display the results of 1) in dBc with respect to 2).

5.5.2.1.5 Test requirements

5.5.2.1.5.1 3,84 Mcps TDD Option

The result 5.5.2.1.4.2. step 3) shall fulfil the requirements of table 5.5.2.1.5.1.

Table 5.5.2.1.5.1: Spectrum Emission Mask Requirement (3,84 Mcps TDD Option)

Δf in MHz (note 1)	Minimum requirement	Measurement bandwidth
2.5 - 3.5	$\left\{-33.5-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	30 kHz
3.5 - 7.5	$\left\{-33.5-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	1 MHz
7.5 - 8.5	$\left\{-37.5-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	1 MHz
8.5 - 12.5	-47.5 dBc	1 MHz
Note 1: Δf is the separation between the carrier frequency and the centre of the measuring filter. Note 2: The first and last measurement position with a 30 kHz filter is at Δf equals to 2.515 MHz and 3.485 MHz. Note 3: The first and last measurement position with a 1 MHz filter is at Δf equals to 4 MHz and 12 MHz. As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.~~,~~		
The lower limit shall be –48.5dBm/3.84 MHz or the minimum requirement presented in this table which ever is the higher.		

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in Annex F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.4.

5.5.2.1.5.2 1,28 Mcps TDD Option

The result 5.5.2.1.4.2. step 3) shall fulfil the requirements of table 5.5.2.1.5.2.

Table 5.5.2.1.5.2: Spectrum Emission Mask Requirement (1,28 Mcps TDD Option)

Δf* in MHz	**Minimum requirement**	**Measurement bandwidth**
0.8	-33.5 dBc	30 kHz **
0.8-1.8	$\left\{-33.5-14\cdot\left(\frac{\Delta f}{MHz}-0.8\right)\right\}dB$	30 kHz **
1.8-2.4	$\left\{-47.5-25\cdot\left(\frac{\Delta f}{MHz}-1.8\right)\right\}dB$	30 kHz **
2.4 – 4.0	-47.5 dBc	1MHz ***
* Δf is the separation between the carrier frequency and the centre of the measuring filter.		
** The first and last measurement position with a 30 kHz filter is at Δf equals to 0.815 MHz and 2.385 MHz.		
*** The first and last measurement position with a 1 MHz filter is at Δf equals to 2.9MHz and 3.5MHz .As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.		
The lower limit shall be –53.5 dBm/1.28 MHz or the minimum requirement presented in this table which ever is the higher.		

~~**Frequency offset from carrier Δf**~~	~~**Minimum requirement**~~	~~**Measurement bandwidth**~~
~~0.8 MHz~~	~~[-33.5] dBc~~	~~30 kHz~~
~~0.8-1.8 MHz~~	~~[-33.5] – 14*(Δf-0.8) dBc~~	~~30 kHz~~
~~1.8-2.4 MHz~~	~~[-47.5] – 25*(Δf-1.8)dBc~~	~~30 kHz~~
~~2.4 – 4.0MHz~~	~~[-47.5] dBc~~	~~1 MHz~~

~~NOTE 1: The first and last measurement position with a 30 kHz filter is 0.815 MHz and 2.385 MHz.~~

~~NOTE 2: The first and last measurement position with a 1 MHz filter is 2.9MHz and 3.5MHz.~~

~~NOTE 3: The lower limit shall be [-53.5] dBm/1,28 MHz or which ever is the higher.~~

NOTE ~~4~~: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in Annex F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.4.

5.5.2.2 Adjacent Channel Leakage power Ratio (ACLR)

5.5.2.2.1 Definition and applicability

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the RRC filtered mean power centered on the assigned channel frequency to the RRC filtered mean ~~average~~ power centered on an adjacent channel frequency. ~~In both cases the power is measured with a filter that has a Root Raised Cosine (RRC) filter response with roll-off α = 0.22 and a bandwidth equal to the chip rate.~~

The requirements in this clause shall apply to all types of UTRA-UE.

5.5.2.2.2 Minimum Requirements

5.5.2.2.2.1 3,84Mcps TDD Option

If the adjacent channel RRC filtered mean power is greater than –50 dBm then the ACLR shall be higher than the value specified in table 5.5.2.2.2.1.

The normative reference for this requirement is TS 25.102 [1] clause 6.6.2.2.1.1.

Table 5.5.2.2.2.1: UE ACLR (3,84 Mcps TDD Option)

Power Class	Adjacent channel	ACLR limit
2, 3	UE-channel ± 5 MHz	33 dB
2, 3	UE-Channel ± 10 MHz	43 dB

5.5.2.2.2.2 1,28Mcps TDD Option

If the adjacent channel RRC filtered mean power is greater than –55 dBm then the ACLR shall be better than the value specified in table 5.5.2.2.2.2.

The normative reference for this requirement is TS 25.102 [1] clause 6.6.2.2.1.2.

Table 5.5.2.2.2.2: UE ACLR (1,28Mcps TDD Option)

Power Class	adjacent channel	ACLR limit
2, 3	UE channel ± 1.6 MHz	33 dB
2, 3	UE channel ± 3.2 MHz	43 dB

NOTE 1: The requirement shall still be met in the presence of switching transients.

NOTE 2: The ACLR requirements reflect what can be achieved with present state of the art technology.

NOTE 3: Requirement on the UE shall be reconsidered when the state of the art technology progresses.

5.5.2.2.3 Test purpose

The test purpose is to verify the ability of the UE to limit the interference produced by the transmitted signal to other UTRA receivers operating at the first or second adjacent RF channel.

5.5.2.2.4 Method of test

5.5.2.2.4.1 Initial conditions

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.
2) A call is set up according to the generic call setup procedure using parameters as specified in table E.3.1.2.
3) Enter the UE into loopback test mode and start the loopback test.

5.5.2.2.4.2 Procedure

1) Measure the RRC filtered meanaverage power centered on the assigned channel frequency. of the active timeslot using the method in annex B.

2) Average over TBD time slots.

3) Measure RRC filtered mean power centered on the first lower adjacent channel frequency. over the useful part of the active TS with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate.

4) Average over TBD time slots.

5) Calculate the ACLR by

Power acc. to 2) / Power acc. to 4).

6) 6) Repeat steps 3), 4) and 5) for the second lower adjacent RF channel (center frequency 10 MHz for the 3,84 Mcps TDD Option and 3,2 MHz for the 1,28 Mcps TDD Option, respectively, below the assigned channel frequency of the transmitted signal) and also for the first and second upper adjacent RF channel (center frequency 5 MHz for the 3,84 Mcps TDD Option and 1,6 MHz for the 1,28 Mcps TDD Option, respectively, and 10 MHz, for the 3,84 Mcps TDD Option and 3,2 MHz for the 1,28 Mcps TDD Option, respectively).

7) Run step 1) to 6) for RF channels Low/Mid/High.

5.5.2.2.5 Test requirements

5.5.2.2.5.1 3,84 Mcps TDD Option

The ACLR calculated in steps 5) and 6) of clause 5.5.2.2.4.2 shall be equal or greater than the limits given in table 5.5.2.2.5.1 for the 3,84 Mcps TDD Option.

Table 5.5.2.2.5.1: UE ACLR (3,84 Mcps TDD Option)

Power Class	Adjacent channel	ACLR limit
2, 3	UE-channel ± 5 MHz	32.2 dB
2, 3	UE-Channel ± 10 MHz	42.2 dB

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F.

5.5.2.2.5.2 1,28 Mcps TDD Option

The ACLR calculated in steps 5) and 6) of clause 5.5.2.2.4.2 shall be equal or greater than the limits given in table 5.5.2.2.5.2 for the 1,28 Mcps TDD Option.

Table 5.5.2.2.5.2: UE ACLR (1,28 Mcps TDD Option)

Power Class	Adjacent channel	ACLR limit
2, 3	UE-channel ± 1.6 MHz	[32.2] dB
2, 3	UE-Channel ± 3.2 MHz	[42.2] dB

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F.

5.5.3 Spurious emissions

5.5.3.1 Definition and applicability

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out of band emissions.

The frequency boundary and the detailed transitions of the limits between the requirement for out band emissions and spectrum emissions are based on ITU-R Recommendations SM.329 [8].

5.5.3.2 Minimum Requirements

5.5.3.2.1 3,84 Mcps TDD Option

These requirements are only applicable for frequencies which are greater than 12.5 MHz away from the UE center carrier frequency.

The normative reference for this requirement is TS 25.102 [1] clause 6.6.3.1.1.

Table 5.5.3.2.1a: General Spurious emissions requirements (3,84 Mcps TDD Option)

Frequency Bandwidth	Resolution Bandwidth	Minimum requirement
9 kHz ≤ f < 150 kHz	1 kHz	-36 dBm
150 kHz ≤ f < 30 MHz	10 kHz	-36 dBm
30 MHz ≤ f < 1000 MHz	100 kHz	-36 dBm
1 GHz ≤ f < 12.75 GHz	1 MHz	-30 dBm

Table 5.5.3.2.1b: Additional Spurious emissions requirements (3,84 Mcps TDD Option)

Frequency Bandwidth	Resolution Bandwidth	Minimum requirement
925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm*
935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm*
1805 MHz ≤ f ≤ 1880 MHz	100 kHz	-71 dBm*

NOTE: The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in table 5.5.3.2.1a are permitted for each UARFCN used in the measurement.

5.5.3.2.2 1,28Mcps TDD Option

These requirements are only applicable for frequencies which are greater than 4 MHz away from the UE center carrier frequency.

The normative reference for this requirement is TS 25.102 [1] clause 6.6.3.1.2.

Table 5.5.3.2.2a : General Spurious emissions requirements (1,28 Mcps TDD Option)

Frequency Bandwidth	Resolution Bandwidth	Minimum requirement
9 kHz ≤ f < 150 kHz	1 kHz	-36 dBm
150 kHz ≤ f < 30 MHz	10 kHz	-36 dBm
30 MHz ≤ f < 1000 MHz	100 kHz	-36 dBm
1 GHz ≤ f < 12.75 GHz	1 MHz	-30 dBm

Table 5.5.3.2.2b : Additional Spurious emissions requirements (1,28 Mcps TDD Option)

Frequency Bandwidth	Resolution Bandwidth	Minimum requirement
925 MHz ≤ f ≤ 935 MHz	100 KHz	-67 dBm*
935 MHz < f ≤ 960 MHz	100 KHz	-79 dBm*
1805 MHz ≤ f ≤ 1880 MHz	100 KHz	-71 dBm*

NOTE: The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in table 5.5.3.2.2a are permitted for each UARFCN used in the measurement.

5.5.3.3 Test purpose

5.5.3.3.1 3,84 Mcps Option

The test purpose is to verify the ability of the UE to limit the interference caused by unwanted transmitter effects to other systems operating at frequencies which are more than 12,5 MHz away from of the UE's carrier frequency.

5.5.3.3.2 1,28 Mcps Option

The test purpose is to verify the ability of the UE to limit the interference caused by unwanted transmitter effects to other systems operating at frequencies which are more than 4 MHz away from of the UE's carrier frequency.

5.5.3.4 Method of test

5.5.3.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.1.
2) A call is set up according to the generic call setup procedure using parameters as specified in table E.3.1.2.
3) Enter the UE into loopback test mode and start the loopback test.

5.5.3.4.2 Procedure

Measure the power of the spurious emissions applying measurement filters with bandwidths as specified in the relevant tables of 5.5.3.2.1 for 3,84 Mcps TDD Option and tables 5.5.3.2.2 for 1,28 Mcps TDD Option, respectively. The characteristic of the filters shall be approximately Gaussian (typical spectrum analyzer filters). The center frequency of the filter shall be swept over the frequency bands as given in the tables. The sweep time shall be sufficiently low to capture the active time slots.

5.5.3.5 Test requirements

5.5.3.5.1 3,84 Mcps TDD Option

The spurious emissions measured according to clause 5.5.3.4.2 shall not exceed the limits specified in the relevant tables of 5.5.3.5.1a and 5.5.3.5.1b.

Table 5.5.3.5.1a: General Spurious emissions requirements

Frequency Bandwidth	Resolution Bandwidth	Test requirement
9 kHz ≤ f < 150 kHz	1 kHz	-36 dBm
150 kHz ≤ f < 30 MHz	10 kHz	-36 dBm
30 MHz ≤ f < 1000 MHz	100 kHz	-36 dBm
1GHz ≤ f < 12.75GHZ	1MHz	-30 dBm

Table 5.5.3.5.1b: Additional Spurious emissions requirements

Frequency Bandwidth	Resolution Bandwidth	Test requirement
925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm*
935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm*
1805 MHz ≤ f ≤ 1880 MHz	100 kHz	-71 dBm*

NOTE 1: The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in table 5.5.3.5.1a for the 3,84 Mcps TDD Option are permitted for each UARFCN used in the measurement.

NOTE 2: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

5.5.3.5.2 1,28 Mcps TDD Option

The spurious emissions measured according to clause 5.5.3.4.2 shall not exceed the limits specified in the relevant tables of 5.5.3.5.2a and 5.5.3.5.2b.

Table 5.5.3.5.2a: General Spurious emissions requirements (1,28 Mcps TDD Option)

Frequency Bandwidth	Resolution Bandwidth	Test requirement
9 kHz ≤ f < 150 kHz	1 kHz	~~[~~-36~~]~~ dBm
150 kHz ≤ f < 30 MHz	10 kHz	~~[~~-36~~]~~ dBm
30 MHz ≤ f < 1000 MHz	100 kHz	~~[~~-36~~]~~ dBm
1 GHz ≤ f < 12.75 GHz	1 MHz	~~[~~-30~~]~~ dBm

Table 5.5.3.5.2b: Additional Spurious emissions requirements (1,28 Mcps TDD Option)

Frequency Bandwidth	Resolution Bandwidth	Test requirement
925 MHz ≤ f ≤ 935 MHz	100 KHz	~~[~~-67~~]~~ dBm*
935 MHz < f ≤ 960 MHz	100 KHz	~~[~~-79~~]~~ dBm*
1805 MHz ≤ f ≤ 1880 MHz	100 KHz	~~[~~-71~~]~~ dBm*

NOTE 1: The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in table 5.5.3.5.2a for the 1,28 Mcps TDD Option are permitted for each UARFCN used in the measurement.

NOTE 2: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

5.6 Transmit Intermodulation

5.6.1 Definition and applicability

The transmit intermodulation performance is a measure of the capability of the transmitter to inhibit the generation of signals in its non linear elements caused by the presence of the wanted signal and an interfering signal reaching the transmitter via the antenna.

User Equipment(s) transmitting in close vicinity of each other can produce intermodulation products, which can fall into the UE, or BS receive band as an unwanted interfering signal . The UE intermodulation attenuation is defined by the ratio of the RRC filtered mean~~output~~ power of the wanted signal to the RRC filtered mean ~~output~~ power of the intermodulation product when an interfering CW signal is added at a level below the wanted signal. ~~Both the wanted signal power and the intermodulation product power are measured with a filter response that is root raised cosine (RRC) with roll-off α=0.22 and with a bandwidth equal to the chip rate.~~

The requirements of this test shall apply for all UTRA-UE.

5.6.2 Minimum Requirements

5.6.2.1 3,84 Mcps TDD Option

The requirement of transmitting intermodulation for carrier spacing 5 MHz is prescribed in the table below.

The normative reference for this requirement is TS 25.102 [1] clause 6.7.1.1.

Table 5.6.2.1: Transmit Intermodulation (3,84 Mcps TDD Option)

Interference Signal Frequency Offset	5MHz	10MHz
Interference Signal Level	-40 dBc	
Interferer Modulation	CW Note: BS Test uses a CDMA modulated signal	
Minimum Requirement	-31dBc	-41dBc

5.6.2.2 1,28 Mcps TDD Option

The requirement of transmitting intermodulation for carrier spacing 1,6 MHz is prescribed in table 5.6.2.2.

The normative reference for this requirement is TS 25.102 [1] clause 6.7.1.1.

Table 5.6.2.2: Transmit Intermodulation (1,28 Mcps TDD Option)

Interference Signal Frequency Offset	1.6 MHz	3.2 MHz
Interference Signal Level	-40 dBc	
Interferer Modulation	CW Note: BS Test uses a CDMA modulated signal	
Minimum Requirement	-31dBc	-41dBc

5.6.3 Test purpose

User Equipment(s) transmitting in close vicinity of each other can produce intermodulation products, which can fall into other UE, or BS receive band as an unwanted interfering signal.

It is the purpose of this test to limit interferences to the own and other systems due to intermodulation products.

5.6.4 Method of test

5.6.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

1) Connect the SS and the interferer to the UE antenna connector as shown in figure A.2.
2) A call is set up according to the generic call setup procedure using parameters as specified in table E.3.1.2.
3) Enter the UE into loopback test mode and start the loopback test.

Parameters of the interferer according to table 5.6.2.1 for 3,84 Mcps TDD Option and table 5.6.2.2 for 1,28 Mcps TDD Option, respectively.

5.6.4.2 Procedure

5.6.4.2.1 3,84 Mcps TDD Option

1) Measure the unwanted emissions according to 5.6.2. in a carrier offset spacing of 5 MHz and in a frequency range [5 MHz to 12.75 GHz], using an interferer +5MHz offset.

   The frequency occupied by the interferer is excluded from the measurement.
2) Repeat 1) with the other 3 interferer-configurations (-5Mz. +10 MHz, -10 MHz).
3) Measure the wanted power according to annex B.
4) Display 1) and 2) in dBc with respect to 3).

5.6.4.2.2 1,28 Mcps TDD Option

1) Measure the unwanted emissions according to 5.6.2.2 in a carrier offset spacing of 1.6 MHz and in a frequency range [1.6 MHz to 12.75GHz], using an interferer +1.6MHz offset.

   The frequency occupied by the interferer is excluded from the measurement.
2) Repeat 1) with the other 3 interferer-configurations (-1.6 MHz, +3.2 MHz, -3.2 MHz).
3) Measure the wanted power according to annex B.
4) Display 1) and 2) in dBc with respect to 3).

5.6.5 Test requirements

5.6.5.1 3,84 Mcps TDD Option

The results in 4) from clause 5.6.4.2.1 shall not exceed the predescribed values in table 5.6.5.1.

Table 5.6.5.1: Transmit Intermodulation (3,84 Mcps TDD Option)

Interference Signal Frequency Offset	5MHz	10MHz
Interference Signal Level	-40 dBc	
Interferer Modulation	CW Note: BS Test uses a CDMA modulated signal	
Minimum Requirement	[-31+TT] dBc	[-41+TT] dBc

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

5.6.5.2 1,28 Mcps TDD Option

The results in 4) from clause 5.6.4.2.2 shall not exceed the predescribed values in table 5.6.5.2.

Table 5.6.5.2 : Transmit Intermodulation (1,28Mcps TDD Option)

Interference signal frequency offset	1.6MHz	3.2MHz
Interference signal level	[-40]dBc	
Minimum requirement of intermodulation products	[-31+TT] dBc	[-41+TT] dBc

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

---NEXT SECTION---

6 Receiver Characteristics

6.1 General

Receiving performance test of the UE is implemented during communicating with the SS via air interface. The procedure uses normal call protocol until the UE is communicating on traffic channel basically. (Refer to TS 34.108 [3] Common Test Environments for User Equipment (UE) Conformance Testing.) On the traffic channel, the UE provides special function for testing that is described in Logical Test Interface and the UE is tested using this function. (Refer to TS 34.109 [3] Logical Test Interface (FDD/TDD) Special conformance testing functions.)

Unless otherwise stated the receiver characteristics are specified at the antenna connector of the UE. For UE(s) with an integral antenna only, a reference antenna with a gain of 0 dBi is assumed. UE with an integral antenna may be taken into account by converting these power levels into field strength requirements, assuming a 0 dBi gain antenna. Receiver characteristics for UE(s) with multiple antennas/antenna connectors are for further study.

The UE antenna performance has a significant impact on system performance, and minimum requirements on the antenna efficiency are therefore intended to be included in future versions of the present document. It is recognized that different requirements and test methods are likely to be required for the different types of UE.

All the parameters in clause 6 are defined using the DL reference measurement channel (12,2 kbps) specified in clause C.3.3.

All Bit Error ratio (BER) measurements in clause 6 shall be performed according to the general rules for statistical testing in Annex F.6.

6.2 Reference sensitivity level

6.2.1 Definition and applicability

The reference sensitivity level is the minimum mean ~~receiver input~~ power ~~measured~~ received at the UE antenna connector at which the BER shall~~does~~ not exceed the specific value.

The requirements in this clause shall apply to all types of UTRA UE.

6.2.2 Minimum Requirements

6.2.2.1 3,84 Mcps TDD Option

For the DL reference measurement channel 12,2 kBit/s specified in annex C, the BER shall not exceed 0.001 for the parameters specified in table 6.2.2.1.

Table 6.2.2.1: Test parameters for reference sensitivity (3,84 Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma \text{DPCH\_Ec}}{I_{or}}$	0	dB
$\hat{I}_{or}$	-105	dBm/3,84 MHz

The normative reference for this requirement is TS 25.102 [1] clause 7.3.1.1.

6.2.2.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 6.2.2.2.

Table 6.2.2.2: Test parameters for reference sensitivity (1,28Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	-108	dBm/1,28 MHz

The normative reference for this requirement is TS 25.102 [1] clause 7.3.1.2.

6.2.3 Test purpose

The test purpose is to verify the ability of the UE to receive a prescribed test signal at the lower end of the dynamic range under defined conditions (no interference, no multipath propagation) with a BER not exceeding a specified level. This test is also used as a reference case for other tests to allow the assessment of degradations due to various sources of interference.

6.2.4 Method of test

6.2.4.1 Initial conditions

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; see clauses G.2.1 and G.2.2.

Frequencies to be tested: low range, mid range, high range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.3.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
4) The level of SS output signal measured at the UE antenna connector shall be –105 dBm for the 3,84 Mcps TDD Option and –108 dBm for the 1,28 Mcps TDD Option, respectively.

6.2.4.2 Procedure

1) Measure the BER of DCH received from the UE at the SS.

6.2.5 Test requirements

6.2.5.1 3,84 Mcps TDD Option

The measured BER, derived in step 1), shall not exceed 0.001 under conditions described in table 6.2.5.1 for the 3,84 Mcps TDD Option.

Table 6.2.5.1: Test parameters for reference sensitivity (3,84 Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	-104.3	dBm/3,84 MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.2.5.2 1,28 Mcps TDD Option

The measured BER, derived in step 1), shall not exceed 0.001 under conditions described in table 6.2.5.2 for the 1,28 Mcps TDD Option.

Table 6.2.5.2: Test parameters for reference sensitivity (1,28 Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	[-107.3]	dBm/1,28 MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.3 Maximum Input Level

6.3.1 Definition and applicability

The~~is~~ maximum input level is defined as the maximum mean~~receiver input~~ power~~, measured~~ received at the UE antenna connector, which does not degrade the specified BER performance.

The requirements in this clause shall apply to all types of UTRA UE.

6.3.2 Minimum requirements

6.3.2.1 3,84 Mcps TDD Option

The BER shall not exceed 0,001 for the parameters specified in table 6.3.2.1.

Table 6.3.2.1: Maximum input level (3,84 Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	-7	dB
$\hat{I}_{or}$	-25	dBm/3,84 MHz

The reference for this requirement is TS 25.102 [1] clause 7.4.1.1.

6.3.2.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 6.3.2.2.

Table 6.3.2.2: Maximum input level (1,28Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	-7	dB
$\hat{I}_{or}$	-25	dBm/1,28 MHz

The reference for this requirement is TS 25.102 [1] clause 7.4.1.2.

6.3.3 Test purpose

The test purpose is to verify the ability of the UE to receive a prescribed test signal at the upper end of the dynamic range under defined conditions (no interference, no multipath propagation) with BER not exceeding a specified value.

6.3.4 Method of test

6.3.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

1) Connect the SS to the UE antenna connector as shown in figure A.3.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
4) The level of SS output signal measured at the UE antenna connector shall be according to table 6.3.2.1 (3,84 Mcps TDD Option) and table 6.3.2.2(1,28 Mcps TDD Option), respectively.

6.3.4.2 Procedure

Measure the BER of DCH received from the UE at the SS.

6.3.5 Test requirements

The measured BER, derived in step 1), shall not exceed 0,001.

6.4 Adjacent Channel Selectivity (ACS)

6.4.1 Definition and applicability

Adjacent Channel Selectivity is a measure of a receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the centre frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receiver filter attenuation on the adjacent channel(s).

The requirements of this test apply to all UTRA UE.

6.4.2 Minimum Requirements

6.4.2.1 3,84 Mcps TDD Option

For the UE of power class 2 and 3, the BER shall not exceed 0,001 for parameters specified in table 6.4.2. This test condition is equivalent to the ACS value 33 dB.

Table 6.4.2.1: Test parameters for Adjacent Channel Selectivity (3,84 Mcps TDD Option)

Parameter	Unit	Level
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	dB	0
$\hat{I}_{or}$	dBm/3,84 MHz	-91
I_{oac} mean power (modulated)	dBm~~/3,84 MHz~~	-52
F_{uw} offset	MHz	+5 or -5

Explanatory note:

Within the reference sensitivity BER= 0.001 corresponds to a testsignal = -105 dBm/3,84 MHz and a noise level -99 dBm /3,84 MHz BW (S/I -6 dB).

Within ACS BER=0.001 is directly verified.

Known from the reference sensitivity, this corresponds to S/I –6dB in the wanted BW.

As a wanted signal of –91 dBm applied, an in-channel-interfering-signal of –85 dBm can be assumed.

Verifying a filter suppression of 33 dB indirectly, an adjacent-channel-interferer of –52 dBm is needed

The normative reference of this requirement is TS 25.102 [1] clause 7.5.

6.4.2.2 1,28 Mcps TDD Option

For the UE of power class 2 and 3, the BER shall not exceed 0,001 for parameters specified in table 6.4.2.2. This test condition is equivalent to the ACS value 33 dB.

Table 6.4.2.2: Test parameters for Adjacent Channel Selectivity (1,28Mcps TDD Option)

Parameter	Unit	Level
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	dB	0
$\hat{I}_{or}$	dBm/1,28MHz	-91
I_{oac} mean power (modulated)	dBm~~/1,28 MHz~~	-54
F_{uw} offset	MHz	+1.6 or –1.6

Explanatory note:

Within the reference sensitivity BER= 0.001 corresponds to a testsignal = ~~[~~-108 dBm~~]~~/1,28 MHz and a noise level ~~[~~-104 dBm~~]~~ /1,28 MHz BW (S/I -4 dB).

Within ACS BER=0.001 is directly verified.

Known from the reference sensitivity, this corresponds to S/I -4dB in the wanted BW.

As a wanted signal of –91 dBm applied, an in-channel-interfering-signal of ~~[~~-87 dBm~~]~~ can be assumed.

Verifying a filter suppression of 33 dB indirectly, an adjacent-channel-interferer of ~~[~~54 dBm~~]~~ is needed

The normative reference of this requirement is TS 25.102 [1] clause 7.5.1.2.

6.4.3 Test purpose

The test purpose is to verify the ability of the UE-receiver to sufficiently suppress the interfering signal in the channel adjacent to the wanted channel.

6.4.4 Method of test

6.4.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

1) Connect the SS and the interferer to the UE antenna connector as shown in figure A.4.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
4) Set the signal generators to produce wanted and interference signals according Table 6.4.2.1 for 3,84 Mcps TDD option and Table 6.4.2.1.2 for 1,28 Mcps TDD option. The interference signal shall be equivalent to a continuously running wideband CDMA signal with one code and chip frequency 3,84 Mchip/s for the 3,84 Mcps TDD Option and 1,28 Mchp/s for the 1,28 Mcps TDD Option, respectively and rolloff 0.22.

6.4.4.2 Procedure

1) Set the interference signal 5 MHz for the 3,84 Mcps TDD Option and 1.6 MHz for the 1,28 Mcps TDD Option, respectively above the assigned channel frequency of the wanted signal.
2) Measure the BER of the wanted signal received from the UE at the SS.
3) Set the interference signal 5 MHz for the 3,84 Mcps TDD Option and 1.6 MHz for the 1,28 Mcps TDD Option, respectively, below the assigned channel frequency of the wanted signal and repeat 2).

6.4.5 Test Requirements

6.4.5.1 3,84 Mcps TDD Option

The measured BER, derived in step 2), shall not exceed 0,001 under conditions described in table 6.4.5.1 for the 3,84 Mcps TDD Option.

Table 6.4.5.1: Test parameters for Adjacent Channel Selectivity (3,84 Mcps TDD Option)

Parameter	Unit	Level
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	dB	0
$\hat{I}_{or}$	dBm/3,84 MHz	-91
I_{oac} mean power (modulated)	dBm~~/3,84 MHz~~	-52
F_{uw} offset	MHz	+5 or -5

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in Annex F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.4.

6.4.5.2 1,28 Mcps TDD Option

The measured BER, derived in step 2), shall not exceed 0,001 under conditions described in table 6.4.5.2 for the 1,28 Mcps TDD Option.

Table 6.4.5.2: Test parameters for Adjacent Channel Selectivity (1,28Mcps TDD Option)

Parameter	Unit	Level
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	dB	0
$\hat{I}_{or}$	dBm/1,28MHz	~~[~~-91~~]~~
I_{oac} mean power (modulated)	dBm~~/1,28 MHz~~	~~[~~-54~~]~~
F_{uw} offset	MHz	~~[~~+1.6 or –1.6~~]~~

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.5 Blocking Characteristics

6.5.1 Definition and applicability

The blocking characteristics is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit.. The blocking performance shall apply at all frequencies except those at which a spurious response occur.

The requirements of this test apply to all UTRA UE.

6.5.2 Minimum Requirements

6.5.2.1 3,84 Mcps TDD Option

The BER shall not exceed 0,001 for the parameters specified in table 6.5.2.1a and table 6.5.2.1b. For table 6.5.2.1b up to 24 exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1MHz step size for the interference signal.

The normative reference for this requirement is TS 25.102 clause 7.6.1.1.

Table 6.5.2.1a: In-band blocking (3,84 Mcps TDD Option)

Parameter	Level		Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0		dB
$\hat{I}_{or}$	-102		dBm/3,84 MHz
$\frac{I_{ouw}\text{ mean power}}{\text{(modulated)}}$	-56 (for $F_{uw\ offset}$ ±10 MHz)	-44 (for $F_{uw\ offset}$ ±15 MHz)	dBm

~~Parameter~~	~~Offset 1~~	~~Offset 2~~	~~Unit~~
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	~~0~~	~~0~~	~~dB~~
~~$\hat{I}_{or}$~~	~~<REFSENS> + 3 dB~~	~~<REFSENS> + 3 dB~~	~~dBm/3,84 MHz~~
~~$I_{blocking}$ (modulated)~~	~~-56~~	~~-44~~	~~dBm/3,84 MHz~~
~~F_{uw} offset~~	~~+10 or -10~~	~~+15 or -15~~	~~MHz~~

Table 6.5.2.1b: Out of band blocking (3,84 Mcps TDD Option)

Parameter	Band 1	Band 2	Band 3	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	0	0	dB
$\hat{I}_{or}$	~~<REFSENS> + 3 dB~~ -102	~~<REFSENS> + 3 dB~~ -102	~~<REFSENS> + 3 dB~~ -102	dBm/3,84 MHz
I_{ouw}~~$_{blocking}$~~ (CW)	-44	-30	-15	dBm
F_{uw} For operation in frequency bands as definded in clause 4.2(a)	1840 <f <1885 1935 <f <1995 2040 <f <2085	1815 <f <1840 2085 <f <2110	1< f <1815 2110< f <12750	MHz
F_{uw} For operation in frequency bands as definded in clause 4.2(b)	1790 < f < 1835 2005 < f < 2050	1765 < f < 1790 2050 < f < 2075	1 < f < 1765 2075 < f < 12750	MHz
F_{uw} For operation in frequency bands as definded in clause 4.2(c)	1850 < f < 1895 1945 < f < 1990	1825 < f < 1850 1990 < f < 2015	1 < f < 1825 2015 < f < 12750	MHz

NOTE 1: For operation referenced in 4.2(a), from 1885 <f< 1900 MHz, 1920 <f< 1935 MHz, 1995 <f< 2010 MHz and 2025<f< 2040 MHz , the appropriate in-band blocking or adjacent channel selectivity in clause 6.4.2.1 shall be applied.

NOTE 2: For operation referenced in 4.2(b), from 1835 < f < 1850 MHz and 1990< f < 2005 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 6.4.2.1 shall be applied.

NOTE 3: For operation referenced in 4.2(c), from 1895 < f < 1910 MHz and 1930< f < 1945 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 6.4.2.1 shall be applied.

6.5.2.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 6.5.2.2a and table 6.5.2.2b.

The normative reference for this requirement is 3G TS 25.102 [1] clause 7.6.1.2.

Table 6.5.2.2a: In-band blocking (1,28Mcps TDD Option)

Parameter	Level		Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0		dB
$\hat{I}_{or}$	-105		dBm/1.28 MHz
I_{ouw} mean power (modulated)	-61 (for F_{uw} offset ±3.2 MHz)	-49 (for F_{uw} offset ±4.8 MHz)	dBm

~~Parameter~~	~~Offset~~	~~Offset~~	~~Unit~~
~~Wanted Signal Level~~	~~<REFSENS> + 3 dB~~	~~<REFSENS> + 3 dB~~	~~dBm/1,28 MHz~~
~~Unwanted Signal Level (modulated)~~	~~-61~~	~~-49~~	~~dBm/1,28 MHz~~
~~F_{uw} (offset)~~	~~+3.2 or –3.2~~	~~+4.8 or –4.8~~	~~MHz~~

Table 6.5.2.2b: Out of band blocking (1,28Mcps TDD Option)

Parameter	Band 1	Band 2	Band 3	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	0	0	dB
~~Wanted Signal Level~~ $\hat{I}_{or}$	~~<REFSENS> + 3 dB~~ -105	~~<REFSENS> + 3 dB~~ -105	~~<REFSENS> + 3 dB~~ -105	dBm/1,28 MHz
~~Unwanted Signal Level~~ I_{ouw} (CW)	-44	-30	-15	dBm
F_{uw} For operation in frequency bands as definded in clause 4.2(a)	1840 <f <1895.2 1924.8 <f <2005.2 2029.8 <f <2085	1815 <f <1840 2085 <f <2110	1< f <1815 2110< f <12750	MHz
F_{uw} For operation in frequency bands as definded in clause 4.2(b)	1790 < f < 1845.2 1994.8 < f < 2050	1765 < f < 1790 2050 < f < 2075	1 < f < 1765 2075 < f < 12750	MHz
F_{uw} For operation in frequency bands as definded in clause 4.2(c)	1850 < f < 1905.2 1934.8 < f < 1990	1825 < f < 1850 1990 < f < 2015	1 < f < 1825 2015 < f < 12750	MHz

NOTE 1: For operation referenced in 4.2(a), from 1895.2 <f< 1900 MHz, 1920 <f< 1924.8 MHz, 2005.2 <f< 2010 MHz and 2025<f< 2029.8 MHz , the appropriate in-band blocking or adjacent channel selectivity in clause 6.4.2.2shall be applied.

NOTE 2: For operation referenced in 4.2(b), from 1845.2 < f < 1850 MHz and 1990< f < 1994.8 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 6.4.2.2 shall be applied.

NOTE 3: For operation referenced in 4.2(c), from 1905.2 < f < 1910 MHz and 1930< f < 1934.8 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 6.4.2.2 shall be applied.

6.5.3 Test purpose

"The test stresses the ability of the UE receiver to withstand high-level interference from unwanted signals at frequency offsets of 10 MHz or more, without undue degradation of its sensitivity."

6.5.4 Method of test

6.5.4.1 Initial conditions

For in-band case:

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

For out-of-band case:

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequency to be tested: 1 arbitrary frequency chosen from the low, mid or high range; see clause G.2.4.

1) Connect the SS and the interfering Signal generator to the UE antenna connector as shown in figure A.5.

2) A call is set up according to the Generic call setup procedure.

3) Enter the UE into loopback test mode and start the loopback test.

6.5.4.2 Procedure

1) The wanted signal frequency channel is set ~~in~~to ~~the middle of the band~~ mid range frequency. The wanted signal power level shall be set according to Table 6.5.5.1a for the 3,84 Mcps TDD option and Table 6.5.5.2a for the 1,28 Mcps TDD option.

2) The interfering Signal Generator is stepped through the frequency range indicated in table 6.5.2.1a for the 3,84 Mcps TDD Option and table 6.5.2.2a for the 1,28 Mcps TDD Option, respectively with a step size of 1 MHz. The interfering signal level shall be set according to Table 6.5.5.1a for the 3,84 Mcps TDD option and Table 6.5.5.2a for the 1,28 Mcps TDD option.

3) The interference signal shall be equivalent to a continuously running wideband CDMA signal with one code and chip frequency 3,84 Mchip/s for the 3,84 Mcps TDD Option and 1,28 Mchp/s for the 1,28 Mcps TDD Option, respectively and rolloff 0.22.

4) Measure the BER of the wanted signal received from the UE at the SS for each step of the interferer.

~~5) Repeat the inband blocking for wanted frequency channels low- band and high band.~~

5~~6~~) The wanted signal frequency channel is set ~~into the middle of the band.~~to an arbitrary frequency chosen from the low, mid or high range. The level of the wanted signal shall be set according to Table 6.5.5.1b for the 3,84 Mcps TDD option and Table 6.5.5.2b for the 1,28 Mcps TDD option.

~~7~~)6) The interfering Signal Generator is stepped through the frequency range indicated in table 6.5.2.1b for the 3,84 Mcps TDD Option and table 6.5.2.2b for the 1,28 Mcps TDD Option, respectively with a step size of 1 MHz. The interfering signal level shall be set according to Table 6.5.5.1b for the 3,84 Mcps TDD option and Table 6.5.5.2b for the 1,28 Mcps TDD option.

7~~8~~) The interference signal is a CW signal.

8~~9~~) Measure the BER of the wanted signal received from the UE at the SS for each step of the interferer.

9) Record the frequencies for which BER exceed the test requirements in Table 6.5.5.1b for the 3,84 Mcps TDD option and Table 6.5.5.2b for the 1,28 Mcps TDD option. These frequencies are further proceeding in subclause 6.6 Spurious Response.

NOTE: Due to the large amount of time-consuming BER tests it is recommended to speed up a single BER test by reducing the 0.001-BER confidence level [10 000 bits under test or 10 errors] for screening the critical frequencies. Critical frequencies must be identified using standard BER confidence level. [30 000 bits or 30 errors].

6.5.5 Test requirements

6.5.5.1 3,84 Mcps TDD Option

The measured BER, derived in step 4) ~~and 5),~~ shall not exceed 0,001 (without exception) under test conditions described in table 6.5.5.1a.

The measured BER, derived in step 8~~9~~), shall not exceed 0,001 except for up to 24 different frequencies of the interfering signal under test conditions described in table 6.5.5.1b.

These frequencies are further processed in clause 6.6 Spurious response.

Table 6.5.5.1a: Test conditions In-band blocking (3,84 Mcps TDD Option)

Parameter	Level		Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0		dB
$\hat{I}_{or}$	-102		dBm/3,84 MHz
$\frac{I_{ouw}\text{ mean power}}{\text{(modulated)}}$	-56 (for $F_{uw\ offset}$ ±10 MHz)	-44 (for $F_{uw\ offset}$ ±15 MHz)	dBm

~~Parameter~~	~~Offset 1~~	~~Offset 2~~	~~Unit~~
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	~~0~~	~~0~~	~~dB~~
~~$\hat{I}_{or}$~~	~~<REFSENS> + 3 dB~~	~~<REFSENS> + 3 dB~~	~~dBm/3,84 MHz~~
~~$I_{blocking}$ (modulated)~~	~~-56~~	~~-44~~	~~dBm/3,84 MHz~~

Table 6.5.5.1b: Test conditions Out of band blocking (3,84 Mcps TDD Option)

Parameter	Band 1	Band 2	Band 3	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	0	0	dB
$\hat{I}_{or}$	~~<REFSENS> + 3 dB~~ -102	~~<REFSENS> + 3 dB~~ -102	~~<REFSENS> + 3 dB~~ -102	dBm/3,84 MHz
I_{ouw}~~blocking~~ (CW)	-44	-30	-15	dBm

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.5.5.2 1,28 Mcps TDD Option

The measured BER, derived in step 4) ~~and 5)~~, shall not exceed 0,001 (without exception) under test conditions described in table 6.5.5.2a.

The measured BER, derived in step ~~8~~9), shall not exceed 0,001 except for up to 24 different frequencies of the interfering signal under test conditions described in table 6.5.5.2b.

These frequencies are further processed in clause 6.6 Spurious response.

Table 6.5.5.2a: Test conditions In-band blocking (1,28 Mcps TDD Option)

~~Parameter~~	~~Offset 1~~	~~Offset 2~~	~~Unit~~
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	~~0~~	~~0~~	~~dB~~
~~$\hat{I}_{or}$~~	~~[<REFSENS> + 3 dB]~~	~~[<REFSENS> + 3 dB]~~	~~dBm/1,28 MHz~~
~~$I_{blocking}$ (modulated)~~	~~[-56]~~	~~[-44]~~	~~dBm/1,28 MHz~~

Parameter	Level		Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0		dB
$\hat{I}_{or}$	-105		dBm/1.28 MHz
I_{ouw} mean power (modulated)	-61 (for F_{uw} offset ±3.2 MHz)	-49 (for F_{uw} offset ±4.8 MHz)	dBm

Table 6.5.5.2b: Test conditions Out of band blocking (~~3,84~~1,28 Mcps TDD Option)

Parameter	Band 1	Band 2	Band 3	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	0	0	dB
$\hat{I}_{or}$	~~[<REFSENS> + 3 dB]~~ -105	~~[<REFSENS> + 3 dB]~~ -105	~~[<REFSENS> + 3 dB]~~ -105	dBm/1,28 MHz
I_{ouw}~~blocking~~ (CW)	~~[-44]~~	~~[-30]~~	~~[-15]~~	dBm

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4

6.6 Spurious Response

6.6.1 Definition and applicability

Spurious response is a measure of the receiver's ability to receive a wanted signal on its assigned channel frequency without exceeding a given degradation due to the presence of an unwanted CW interfering signal at any other frequency at which a response is obtained i.e. for which the blocking limit is not met.

The requirements of this test apply to all types of UTRA for the UE.

6.6.2 Minimum Requirements

6.6.2.1 3,84 Mcps TDD Option

The BER shall not exceed 0,001 for the parameters specified in table 6.6.2.1.

The normative reference for this requirement is TS 25.102 clause 7.7.1.1.

Table 6.6.2.1: Spurious Response (3,84 Mcps TDD Option)

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	~~<REFSENS> + 3~~ -102	dBm/3,84 MHz
~~I~~blocking ~~I~~ouw (CW)	-44	dBm
F_{uw}	Spurious response frequencies	MHz

6.6.2.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 6.6.2.2.

Table 6.6.2.2: Spurious Response (1,28Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$ ~~Wanted Signal Level~~	-105~~<REFSENS> + 3 dB~~	dBm/1,28 MHz
I_{ouw} (CW)~~Unwanted Signal Level (CW)~~	-44	dBm
F_{uw}	Spurious response frequencies	MHz

6.6.3 Test purpose

Spurious response frequencies, identified in the blocking test, are measured against a less stringent test requirement. The test stresses the ability of the receiver to withstand high level interference signals without undue degradation of its sensitivity due to the receiver's frequency conversion concept.

6.6.4 Method of test

6.6.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequency to be tested: the same frequency as chosen in subclause 6.5.4.1 for Blocking characteristics out-of-band case.

1) Connect the SS and the unwanted signal to the UE antenna connector as shown in figure A.6.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.

6.6.4.2 Procedure

1) Set~~Repeat~~ the wanted signal frequency to the frequency used for the out-of-band blocking test~~setting from the blocking test~~. Set the power level of the wanted signal according to table 6.6.2.1 for the 3,84 Mcps TDD Option and table 6.6.2.2 for the 1,28 Mcps TDD Option, respectively.

2) ~~Repeat the frequency settings~~ Set ~~of~~ thefrequency of the interferer signal according the recorded spurious response frequency values obtained from the out-of-band blocking test as described in 6.5.4.2, at which the blocking test failed. Set the power level of the intereferer according to table 6.6.5.1 for the 3,84 Mcps TDD Option and table 6.6.5.2 for the 1,28 Mcps TDD Option, respectively.

3) Measure the BER of DCH received from the UE at the SS. ~~for each of the settings 1) and 2).~~

6.6.5 Test requirements

6.6.5.1 3,84 Mcps TDD

The measured BER, derived in step 3), shall not exceed 0,001 under. test conditions described in table 6.6.5.1 for the 3,84 Mcps TDD Option.

Table 6.6.5.1: Test Parameters Spurious Response (3,84 Mcps TDD Option)

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	~~<REFSENS> + 3~~ -102	dBm/3,84 MHz
$I_{ouwblocking}$ (CW)	-44	dBm
F_{uw}	Spurious response frequencies	MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.6.5.2 1,28 Mcps TDD

The measured BER, derived in step 3), shall not exceed 0,001 under test conditions described in table 6.6.5.2 for the 1,28 Mcps TDD Option.

Table 6.6.5.2: Test Parameters Spurious Response (1,28 Mcps TDD Option)

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	~~[<REFSENS> + 3]~~ -105	dBm/1,28 MHz
$I_{ouwblocking}$ (CW)	~~[~~-44~~]~~	dBm
F_{uw}	Spurious response frequencies	MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.7 Intermodulation Characteristics

6.7.1 Definition and applicability

Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the receiver to receiver a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal.

The requirements of this test shall apply to all UTRA UE.

6.7.2 Minimum Requirements

6.7.2.1 3,84 Mcps TDD Option

The BER shall not exceed 0,001 for the parameters specified in table 6.7.2.1.

The normative reference for this requirement is TS 25.102 clause 7.8.1.1.

Table 6.7.2.1: Receive intermodulation characteristics (3,84 Mcps TDD Option)

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$ ~~Wanted Signal Level~~	~~<REFSENS> + 3 dB~~ -102	dBm/3,84 MHz
$I_{ouw1(CW)}$	-46	dBm
I_{ouw2} mean power (modulated)	-46	dBm~~/3,84 MHz~~
F_{uw1} (CW)	±10	MHz
F_{uw2} (Modulated)	±20	MHz

6.7.2.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 6.7.2.2.

The normative reference for this requirement is TS 25.102 clause 7.8.1.2.

Table 6.7.2.2: Receive intermodulation characteristics (1,28 Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	~~<REFSENS> + 3 dB~~ -105	dBm/1,28 MHz
$I_{ouw1\ (CW)}$	-46	dBm
I_{ouw2} mean power (modulated)	-46	dBm~~/1,28 MHz~~
F_{uw1} (CW)	±3.2	MHz
F_{uw2} (Modulated)	±6.4	MHz

6.7.3 Test purpose

The test stresses the ability of the receiver to withstand two or more high level interference signals without undue degradation of its sensitivity due to the receiver's non-linear elements.

6.7.4 Method of test

6.7.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: mid range; see clause G.2.4.

1) Connect the SS and the unwanted signals to the UE antenna connector as shown in figure A.7.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.

6.7.4.2 Procedure

1) Set the wanted and interfering signals as indicated in table 6.7.2.1 for the 3,84 Mcps TDD Option and table 6.7.2.2 for the 1,28 Mcps TDD Option) with positive offset with respect to the wanted signal.
2) Measure the BER of DCH received from the UE at the SS.
3) Set the interfering signals as indicated in table 6.7.2.1 for the 3,84 Mcps TDD Option and table 6.7.2.2 for the 1,28 Mcps TDD Option with negative offset with respect to the wanted signal and repeat 2).

6.7.5 Test requirements

6.7.5.1 3,84 Mcps TDD Option

The measured BER, derived in step 2) and 3), shall not exceed 0,001 under test conditions described in table 6.7.5.1 for the 3,84 Mcps TDD Option.

Table 6.7.5.1: Test parameters Receive intermodulation characteristics (3,84 Mcps TDD Option)

Parameter	Value	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$Wanted Signal Level	~~<REFSENS> + 3 dB~~ -102	dBm/3,84 MHz
$I_{ouw1(CW)}$	-46	dBm
I_{ouw2} mean power (modulated)	-46	dBm~~/3,84 MHz~~
F_{uw1} (CW)	±10	MHz
F_{uw2} (Modulated)	±20	MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.7.5.2 1,28 Mcps TDD Option

The measured BER, derived in step 2) and 3), shall not exceed 0,001 under test conditions described in table 6.7.5.2 for the 1,28 Mcps TDD Option.

Table 6.7.5.2: Test parameters Receive intermodulation characteristics (1,28 Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	~~[<REFSENS> + 3 dB]~~ -105	dBm/1,28 MHz
$I_{ouw1\ (CW)}$	~~[~~-46~~]~~	dBm
~~I_{ouw2}~~ I_{ouw2} mean power (modulated)	~~[~~-46~~]~~	dBm~~/1,28 MHz~~
F_{uw1} (CW)	~~[~~±3.2~~]~~	MHz
F_{uw2} (Modulated)	~~[~~±6.4~~]~~	MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in Annex F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.4.

6.8 Spurious Emissions

6.8.1 Definition and applicability

The Spurious Emissions Power is the power of emissions generated or amplified in a receiver that appear at the UE antenna connector.

The requirements of this test are applicable for all UTRA UE.

6.8.2 Minimum Requirements

6.8.2.1 3,84 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 6.8.2.1: Receiver spurious emission requirements (3,84 Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12,5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	-60 dBm	3,84 MHz	With the exception of frequencies between 12,5MHz below the first carrier frequency and 12,5MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	-47 dBm	1 MHz	

The normative reference for this requirement is TS 25.102 [1] clause 7.9.1.1.

6.8.2.2 1,28 Mcps TDD Option

The power of any spurious emission shall not exceed.

Table 6.8.2.2: Receiver spurious emission requirements (1,28Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.92 GHz – 2.01 GHz and 2.025 GHz – 2.11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the UE.
1.9 GHz – 1.92 GHz and 2.01 GHz – 2.025 GHz and 2.11 GHz – 2.170 GHz	-64 dBm	1,28 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the UE.
2.170 GHz – 12.75 GHz	-47 dBm	1 MHz	

The normative reference for this requirement is TS 25.102 [1] clause 7.9.1.2.

6.8.3 Test purpose

The test purpose is to verify the UE's ability to limit interference caused by receiver spurious emissions to the own and the other systems. The test requirements are tighter than in clause 5.5.3 ((TX) Spurious Emissions) because the time of Receive–Only-Operation is generally much longer than RX-TX-Operation.

6.8.4 Method of test

6.8.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: 1 arbitrary frequency selected between low and high range; see clause G.2.4.

1) Connect the measurement equipment to the UE antenna connector according to figure A.8.

2) RF parameters are setup according to table 6.8.4.1a for 3,84 Mcps TDD option and 6.8.4.1b for 1,28 Mcps TDD option respecively.~~[TBD]~~.

3) The UE shall be in the CELL_Fach state

4) The neighbour cell list shall be empty. HCS is not used

5) The timer T305 shall be set to ∞, so that no cell update is triggered during the measurement.

6) Set Qrxlevmin to –105 dBm.

7) Set UE_TXPWR_MAX_RACH such that Pcompensation =0.

8) Set $S_{intersearch}$, $S_{intrasearch}$ and $Ssearch_{RAT\ m}$ to zero.

Note 1: With the CELL_FACH state (3) in combination with the signalling parameters (4), (5), (6), (7), (8) and the SS level (2) it is ensured that UE continuously receives the S-CCPCH and no cell reselections are performed [see 25.304, subcl. 5.2.3.and 5.2.6]. No transmission of the UE will interfere the measurement.

9) The measurement equipment shall measure power through:

- a 100 kHz filter with a approximately gaussian filter-characteristic (typical spectrum analyzer); or
- a 1 MHz filter with a approximately gaussian filter-characteristic (typical spectrum analyzer); or
- a matched filter with a bandwidth equal to the chip frequency 3,84 Mchip/s for the 3,84 Mcps TDD Option and 1,28 Mchips/s for the 1,28 Mcps TDD Option, respectively, and rolloff 0.22.

Table 6.8.4.1a: RF parameters for receiver spurious test (3,84Mcps TDD Option)

Parameter	Unit	Level
PCCPCH Ec/Ior	dB	-3
SCH_Ec/Ior	dB	-9
$\hat{I}_{or}/I_{oc}$	dB	9
PCCPCH RSCP	dBm	-64

Table 6.8.4.1b: RF parameters for receiver spurious test (1,28Mcps TDD Option)

Parameter	Unit	Level
PCCPCH Ec/Ior	dB	-3
DwPCH Ec/Ior	dB	0
$\hat{I}_{or}/I_{oc}$	dB	9
PCCPCH RSCP	dBm	-64

6.8.4.2 Procedure

Measure the power of spurious emissions by covering the frequency ranges of table 6.8.2.1 for the 3,84 Mcps TDD Option and table 6.8.2.2 for the 1,28 Mcps TDD Option, respectively. Cover the UTRA/TDD and UTRA/FDD UE receive band in contiguous steps of 200 kHz. Cover the other frequency ranges in contiguous steps of 100 kHz. Apply the corresponding filters of table 6.8.2.1 for the 3,84 Mcps TDD Option and table 6.8.2.2 for the 1,28 Mcps TDD Option, respectively. The step duration shall be sufficient slow to capture intermittent spurious emissions.

6.8.5 Test requirements

6.8.5.1 3,84 Mcps TDD Option

The spurious emissions shall be according to table 6.8.5.1 for the 3,84 Mcps TDD Option.

Table 6.8.5.1: Receiver spurious emission test requirements (3,84 Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	-60 dBm	3,84 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	-47 dBm	1MHz	

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.8.5.2 1,28 Mcps TDD Option

The spurious emissions shall be according to table 6.8.5.2 for the 1,28 Mcps TDD Option.

Table 6.8.5.2: Receiver spurious emission requirements (1,28Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	[-57 dBm]	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	[-47 dBm]	1 MHz	With the exception of frequencies between 4 MHz below the first carrier frequency and 4 MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	[-64 dBm]	1,28 MHz	With the exception of frequencies between 4 MHz below the first carrier frequency and 4 MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	[-47 dBm]	1 MHz	

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

---NEXT SECTION---

Annex D (normative): Propagation conditions

D.1 Test Environments

Table D.1 details the test services, the information data and the propagation conditions.

Table D.1: Test Environments for UE Performance Specifications

Test Services	Information Data Rate	Static	Multipath Case 1	Multipath Case 2	Multipath Case 3
		Performance metric			
Paging Message			-	-	-
FACH Message			-	-	-
Circuit Switched Services	12,2 kbps	BLER <	BLER <	BLER <	BLER <
	64 kbps	BLER <	BLER <	BLER <	BLER <
	144 kbps	BLER <	BLER <	BLER <	BLER <
	384 kbps	BLER <	BLER <	BLER <	BLER <
	2048 kbps	BLER <	-	-	-
Packet Switched Data	TBD	TBD	TBD	TBD	TBD

D.2 Propagation Conditions

D.2.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multi-paths exist for this propagation model.

D.2.2 Multi-path fading propagation conditions

D.2.2.1 3,84 Mcps TDD Option

Table D.2.2.1 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

Table D.2.2.1: Propagation Conditions for Multi path Fading Environments

Case 1, speed 3km/h		Case 2, speed 3 km/h		Case 3, speed 120 km/h		Case 4, speed 3 km/h	
Relative Delay [ns]	Relative Mean~~Aver age~~ Power [dB]	Relative Delay [ns]	Relative Mean~~Aver age~~ Power [dB]	Relative Delay [ns]	Relative Mean~~Aver age~~ Power [dB]	Relative Delay [ns]	Relative Mean~~Aver age~~ Power [dB]
0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	976	0
		12000	0	521	-6		
				781	-9		

D.2.2.2 1,28 Mcps TDD Option

Table D2.2.2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

Table D.2.2.2: Propagation Conditions for Multi-Path Fading Environments

Case 1, speed 3km/h		Case 2, speed 3km/h		Case 3, speed 120km/h	
Relative Delay [ns]	Relative Mean ~~Average~~ Power [dB]	Relative Delay [ns]	Relative Mean~~Average~~ Power [dB]	Relative Delay [ns]	Relative Mean ~~Average~~ Power [dB]
0	0	0	0	0	0
2928	-10	2928	0	781	-3
		12000	0	1563	-6
				2344	-9

---NEXT SECTION---

F.1.2 Measurement of transmitter

Table F.1.2: Maximum Test System Uncertainty for transmitter tests

Clause	Maximum Test System Uncertainty
5.2 UE Maximum Output Power	±0.7 dB
5.3 Frequency Stability	± 10Hz
5.4.1 Uplink power control	Relative ±[0.3] dB
5.4.2 Minimum Transmit Power	±1.0 dB
5.4.3 Transmit OFF Power	±1.5 dB
5.4.4 Transmit ON/OFF Power	TBD
5.4.5 Out-of-synchronisation handling of output power	±0,4 dB
5.5.1 Occupied Bandwidth	±100 kHz
5.5.2.1 Spectrum emission mask	±1.5 dB
5.5.2.2 ACLR	~~5 MHz offset:~~ ± 0,8 dB ~~10 MHz offset: ± 0,8 dB~~
5.5.3 Spurious emissions	± 2.0 dB for UE and coexistenece bands for results > -60 dBm ± 3.0 dB for results < -60 dBm Outside above: f≤2.2GHz : ± 1.5 dB 2.2 GHz < f ≤ 4 GHz : ± 2.0 dB f > 4 GHz : ±4.0 dB
5.6 Transmit intermodulation:	Will be based on BS, need to work out freq and level ranges.
5.7.1 Transmit modulation: EVM	±2.5 %
5.7.2 Transmit modulation: peak code domain error	±1 dB

F.1.3 Measurement of receiver

Table F.1.3 Maximum Test System Uncertainty for receiver tests

Clause	Maximum Test System Uncertainty
6.2 Reference Sensitivity Level	± 0.7 dB
6.3 maximum input level:	TBD
6.4 Adjacent Channel Selectivity (ACS)	Overall system uncertainty ± 1.1 dB
6.5 Blocking Characteristics (3,84 Mcps TDD option)	Using ± 0.7 dB for signal and interferer as currently defined, and 68 dB ACLR @ 10 MHz.System error with f <15 MHz offset: ± 1.4 dB f >= 15 MHz offset and f ≤ 2.2 GHz: ± 1.0 dB 2.2 GHz < f ≤ 4 GHz : ±1.7 dB f > 4 GHz: ±3.1 dB
6.5 Blocking Characteristics (1,28 Mcps TDD option)	Using ± 0.7 dB for signal and interferer as currently defined, and 68 dB ACLR @ 3,2 MHz.System error with f <4,8 MHz offset: ± 1.4 dB f >= 4,8 MHz offset and f ≤ 2.2 GHz: ± 1.0 dB 2.2 GHz < f ≤ 4 GHz : ±1.7 dB f > 4 GHz: ±3.1 dB
6.6 Spurious Response	f < 2.2 GHz: ±1.0dB 2.2 < f < 4GHz: ±1.7dB f > 4 GHz: ±3.1dB
6.7 Intermodulation Characteristics	± 1.3 dB with Formula = $\sqrt{(2 \cdot CW\_level\_error)^2 + (\mathrm{mod}\_level\_error)^2 + (wanted\_signal\_level\_error)^2}$ (Using CW interferer ±0.5 dB, modulated interferer ±0.5 dB, wanted signal ±0.7 dB)
6.8 Spurious Emissions	± 3.0 dB for UE receive band ~~(-78 dBm)~~ Outside above: f≤2.2GHz : ± 2.0dB ~~(-57 dBm)~~ 2.2 GHz < f ≤ 4 GHz : ± 2.0 dB ~~(-47 dBm)~~ f > 4 GHz : ±4.0 dB ~~(-47 dBm)~~

3GPP TSG-T1 Meeting #16
Yokohama, Japan, 29 July - 2 August 2002

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CR-Form-v7

CHANGE REQUEST

⌘ **34.122** **CR** **108** ⌘ **rev** **-** ⌘ Current version: **3.8.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction to Receiver Spurious Emission Test Case
Source:	⌘	T1-RF
Work item code:	⌘	-
Date:	⌘	29/07/2002
Category:	⌘	**F**
Release:	⌘	R99

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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Messaging content incomplete for testing receiver spurious emissions in CELL_FACH state
Summary of change:	⌘	Added reference to set-up procedure in 34.108 for CELL_FACH state and specific message chart to receiver spurious emission test case.
Consequences if not approved:	⌘	Test case would be incomplete.

Clauses affected:	⌘	6.8.4

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:
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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.

6.8 Spurious Emissions

6.8.1 Definition and applicability

The Spurious Emissions Power is the power of emissions generated or amplified in a receiver that appear at the UE antenna connector.

The requirements of this test are applicable for all UTRA UE.

6.8.2 Minimum Requirements

The power of any spurious emission shall not exceed:

Table 6.8.2: Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	-60 dBm	3,84 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	-47 dBm	1 MHz	

The normative reference for this requirement is TS 25.102 [1] clause 7.9.

6.8.3 Test purpose

The test purpose is to verify the UE's ability to limit interference caused by receiver spurious emissions to the own and the other systems. The test requirements are tighter than in clause 5.5.3 ((TX) Spurious Emissions) because the time of Receive–Only-Operation is generally much longer than RX-TX-Operation.

6.8.4 Method of test

6.8.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: 1 arbitrary frequency selected between low and high range; see clause G.2.4.

1) Connect the measurement equipment to the UE antenna connector according to figure A.8.

2) RF parameters are setup according to table [TBD].

3) ~~The UE shall be in the CELL_FACH state.~~ A call is set up according to the setup procedure specified in TS34.108 [3] sub clause 7.3.3, with the following exceptions for information elements in System Information Block type3.

Information Element	Value/Remark
- Cell selection and re-selection info	
- CHOICE mode	TDD
- Sintrasearch	0 dB
- Sintersearch	0 dB
- RAT List	This parameter is configurable
- Ssearch,RAT	0 dB
- Maximum allowed UL TX power	Power level where Pcompensation=0

~~4) The neighbour cell list shall be empty. HCS is not used.~~

~~5) The timer T305 shall be set to ∞, so that no cell update is triggered during the measurement.~~

~~6) Set Qrxlevmin to -105 dBm.~~

~~7) Set UE_TXPWR_MAX_RACH such that Pcompensation =0.~~

~~8) Set $S_{intersearch}$, $S_{intrasearch}$ and $Sscearch_{RAT\ m}$ to zero.~~

Note 1: The setup procedure (3) sets the UE into CELL_FACH state. With ~~the CELL_FACH state (3) in combination with the signalling parameters (4), (5), (6), (7), (8)~~this state and the SS level (2) it is ensured that UE continuously ~~receives~~ monitors the S-CCPCH and no cell reselections are performed [see 25.304, subcl. 5.2.3.and 5.2.6]. No transmission of the UE will interfere with the measurement.

~~9) The measurement equipment shall measure power through:~~

~~— a 100 kHz filter with a approximately gaussian filter characteristic (typical spectrum analyzer); or~~

~~— a 1 MHz filter with a approximately gaussian filter characteristic (typical spectrum analyzer); or~~

~~— a matched filter with a bandwidth equal to the chip frequency 3,84 Mchip/s and rolloff 0,22.~~

6.8.4.2 Procedure

Measure the power of spurious emissions by covering the frequency ranges of table 6.8.2. Cover the UTRA/TDD and UTRA/FDD UE receive band in contiguous steps of 200 kHz. Cover the other frequency ranges in contiguous steps of 100 kHz. Apply the corresponding filters of table 6.8.2. The step duration shall be sufficient slow to capture intermittent spurious emissions.

6.8.5 Test requirements

The spurious emissions shall be according to table 6.8.5.

Table 6.8.5: Receiver spurious emission test requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	-60 dBm	3,84 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	-47 dBm	1MHz	

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in Annex F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.4.

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Yokohama, Japan, 29 July - 2 August 2002

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CR-Form-v7

CHANGE REQUEST

⌘ **34.122** **CR** **109** ⌘ **rev** **-** ⌘ Current version: **4.4.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction to Receiver Spurious Emission Test Case
Source:	⌘	T1-RF
Work item code:	⌘	TEI
Date:	⌘	29/07/2002
Category:	⌘	**A**
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)*
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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Messaging content incomplete for testing receiver spurious emissions in CELL_FACH state
Summary of change:	⌘	Added reference to set-up procedure in 34.108 for CELL_FACH state and specific message chart to receiver spurious emission test case.
Consequences if not approved:	⌘	Test case would be incomplete.

Clauses affected:	⌘	6.8.4

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

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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.

6.8 Spurious Emissions

6.8.1 Definition and applicability

The Spurious Emissions Power is the power of emissions generated or amplified in a receiver that appear at the UE antenna connector.

The requirements of this test are applicable for all UTRA UE.

6.8.2 Minimum Requirements

6.8.2.1 3,84 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 6.8.2.1: Receiver spurious emission requirements (3,84 Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12,5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	-60 dBm	3,84 MHz	With the exception of frequencies between 12,5MHz below the first carrier frequency and 12,5MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	-47 dBm	1 MHz	

The normative reference for this requirement is TS 25.102 [1] clause 7.9.1.1.

6.8.2.2 1,28 Mcps TDD Option

The power of any spurious emission shall not exceed.

Table 6.8.2.2: Receiver spurious emission requirements (1,28Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.92 GHz – 2.01 GHz and 2.025 GHz – 2.11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the UE.
1.9 GHz – 1.92 GHz and 2.01 GHz – 2.025 GHz and 2.11 GHz – 2.170 GHz	-64 dBm	1,28 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the UE.
2.170 GHz – 12.75 GHz	-47 dBm	1 MHz	

The normative reference for this requirement is TS 25.102 [1] clause 7.9.1.2.

6.8.3 Test purpose

The test purpose is to verify the UE's ability to limit interference caused by receiver spurious emissions to the own and the other systems. The test requirements are tighter than in clause 5.5.3 ((TX) Spurious Emissions) because the time of Receive–Only-Operation is generally much longer than RX-TX-Operation.

6.8.4 Method of test

6.8.4.1 Initial conditions

Test environment: normal; see clauses G.2.1 and G.2.2.

Frequencies to be tested: 1 arbitrary frequency selected between low and high range; see clause G.2.4.

1) Connect the measurement equipment to the UE antenna connector according to figure A.8.

2) RF parameters are setup according to table [TBD].

3) ~~The UE shall be in the CELL_Fach state~~ A call is set up according to the setup procedure specified in TS34.108 [3] sub clause 7.3.3, with the following exceptions for information elements in System Information Block type3.

Information Element	Value/Remark
- Cell selection and re-selection info	
- CHOICE mode	TDD
- Sintrasearch	0 dB
- Sintersearch	0 dB
- RAT List	This parameter is configurable
- Ssearch,RAT	0 dB
- Maximum allowed UL TX power	Power level where Pcompensation=0

~~4) The neighbour cell list shall be empty. HCS is not used~~

~~5) The timer T305 shall be set to ∞, so that no cell update is triggered during the measurement.~~

~~6) Set Qrxlevmin to -105 dBm.~~

~~7) Set UE_TXPWR_MAX_RACH such that Pcompensation =0.~~

~~8) Set $S_{intersearch}$, $S_{intrasearch}$ and $Ssearch_{RAT\ m}$ to zero.~~

Note 1: The setup procedure (3) sets the UE into CELL_FACH state. With ~~the CELL_FACH state (3) in combination with the signalling parameters (4), (5), (6), (7), (8)~~ this state and the SS level (2) it is ensured that UE continuously ~~receives~~ monitors the S-CCPCH and no cell reselections are performed [see 25.304, subcl. 5.2.3.and 5.2.6]. No transmission of the UE will interfere with the measurement.

~~9) The measurement equipment shall measure power through:~~

- ~~a 100 kHz filter with a approximately gaussian filter characteristic (typical spectrum analyzer); or~~
- ~~a 1 MHz filter with a approximately gaussian filter characteristic (typical spectrum analyzer); or~~
- ~~a matched filter with a bandwidth equal to the chip frequency 3,84 Mchip/s for the 3,84 Mcps TDD Option and 1,28 Mchips/s for the 1,28 Mcps TDD Option, respectively, and rolloff 0.22.~~

6.8.4.2 Procedure

Measure the power of spurious emissions by covering the frequency ranges of table 6.8.2.1 for the 3,84 Mcps TDD Option and table 6.8.2.2 for the 1,28 Mcps TDD Option, respectively. Cover the UTRA/TDD and UTRA/FDD UE receive band in contiguous steps of 200 kHz. Cover the other frequency ranges in contiguous steps of 100 kHz. Apply the corresponding filters of table 6.8.2.1 for the 3,84 Mcps TDD Option and table 6.8.2.2 for the 1,28 Mcps TDD Option, respectively. The step duration shall be sufficient slow to capture intermittent spurious emissions.

6.8.5 Test requirements

6.8.5.1 3,84 Mcps TDD Option

The spurious emissions shall be according to table 6.8.5.1 for the 3,84 Mcps TDD Option.

Table 6.8.5.1: Receiver spurious emission test requirements (3,84 Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	-60 dBm	3,84 MHz	With the exception of frequencies between 12,5 MHz below the first carrier frequency and 12,5 MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	-47 dBm	1MHz	

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.

6.8.5.2 1,28 Mcps TDD Option

The spurious emissions shall be according to table 6.8.5.2 for the 1,28 Mcps TDD Option.

Table 6.8.5.2: Receiver spurious emission requirements (1,28Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	[-57 dBm]	100 kHz	
1 GHz – 1,9 GHz and 1,92 GHz – 2,01 GHz and 2,025 GHz – 2,11 GHz	[-47 dBm]	1 MHz	With the exception of frequencies between 4 MHz below the first carrier frequency and 4 MHz above the last carrier frequency used by the UE.
1,9 GHz – 1,92 GHz and 2,01 GHz – 2,025 GHz and 2,11 GHz – 2,170 GHz	[-64 dBm]	1,28 MHz	With the exception of frequencies between 4 MHz below the first carrier frequency and 4 MHz above the last carrier frequency used by the UE.
2,170 GHz – 12,75 GHz	[-47 dBm]	1 MHz	

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in annex F clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in annex F clause F.4.