TSG-RAN Meeting #21 ***RP-030495***
Frankfurt, Germany, 16-19 September 2003

Title: **CRs (Rel-5) to TS 25.331.**

Source: **TSG-RAN WG2**

Agenda item: **7.3.5**

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.331	1997	-	Rel-5	Correction to UE behaviour on T317 expiry	F	5.5.0	5.6.0	R2-031883	TEI5
25.331	2029	-	Rel-5	Correcting value range of MAC-hs buffer ID	F	5.5.0	5.6.0	R2-031934	HSDPA-L23
25.331	2030	-	Rel-5	Correction of handling of IE "MAC-hs reset indicator" in Added or Reconfigured DL TrCH information	F	5.5.0	5.6.0	R2-031935	HSDPA-L23
25.331	2035	1	Rel-5	UE capability signalling for UMTS1800	F	5.5.0	5.6.0	R2-031968	RlnImp-UMTS18
25.331	2039	-	Rel-5	Handover between UTRAN and GERAN Iu mode	F	5.5.0	5.6.0	R2-031947	TEI5
25.331	2040	-	Rel-5	Updated references to the RRC State Indicator IE	F	5.5.0	5.6.0	R2-031948	TEI5
25.331	2041	-	Rel-5	Corrections to Event 1D	C	5.5.0	5.6.0	R2-031950	TEI5

Note 1: 25.331 CR 2028 (Reconfiguration of MAC-d flow) is presented by RAN WG3 in RP-030449, as linked with 25.423 and 25.433 CRs.

Note 2: 25.331 CR 2061 (HS-SCCH transmit diversity mode) is presented by RAN WG1 in RP-030462, as linked with a CR on 25.211.

3GPP TSG-RAN WG2 #37 ***R2-031883***
Budapest, Hungary, 25th-29th August, 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **1997** ⌘ **rev** ⌘ Current version: **5.5.0** ⌘

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

Title:	⌘	Correction to UE behaviour on T317 expiry
Source:	⌘	RAN WG2
Work item code:	⌘	TEI-5
Date:	⌘	August 2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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:	⌘	In the previous meeting, to prevent the situation where states of UE and UTRAN are unsynchronized resulting unreachable UE, it is agreed that timer T317 shall never expire and all its value shall be assumed to be "infinity". But currently, 13.1 of TS 25.331 say that UE return to idle mode on T317 expiry. This could lead to the misunderstanding that T317 always expire and UE goes to Idle mode.
Summary of change:	⌘	1. It is clarified in 13.1 that timer T317 never expires. 2. "Transit to idle mode" at the expiry of T317 is removed. **Isolated Impact analysis:** This CR has an impact on UE implementation. If UE does not follow what is indicated in this CR, the state of UE and UTRAN will be unsynchronized resulting unreachable UE. It would not affect implementations behaving like indicated in the CR, it would affect implementations supporting the corrected functionality otherwise.
Consequences if not approved:	⌘	There will be different interpretation in the specification with regard to the UE's action when T317 expire. UEs lose UTRAN originated pages.

Clauses affected:	⌘	13.1

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

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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.

13.1 Timers for UE

Timer	Start	Stop	At expiry
T300	Transmission of RRC CONNECTION REQUEST	Reception of RRC CONNECTION SETUP	Retransmit RRC CONNECTION REQUEST if V300 =< N300, else go to Idle mode
T302	Transmission of CELL UPDATE/URA UPDATE	Reception of CELL UPDATE CONFIRM/URA UPDATE CONFIRM	Retransmit CELL UPDATE/URA UPDATE if V302 =< N302, else, go to Idle mode
T304	Transmission of UE CAPABILITY INFORMATION	Reception of UE CAPABILITY INFORMATION CONFIRM	Retransmit UE CAPABILITY INFORMATION if V304 =< N304, else initiate a cell update procedure
T305	Entering CELL_FACH or URA_PCH or CELL_PCH state. Reception of CELL UDPATE CONFIRM/URA UPDATE CONFIRM.	Entering another state.	Transmit CELL UPDATE if T307 is not activated and the UE detects "in service area". Otherwise, if T307 is not active, start T307.
T307	When the timer T305 has expired and the UE detects "out of service area".	When the UE detects "in service area".	Transit to idle mode
T308	Transmission of RRC CONNECTION RELEASE COMPLETE	Not stopped	Transmit RRC CONNECTION RELEASE COMPLETE if V308 <=N308, else go to idle mode.
T309	Upon reception of CELL CHANGE ORDER FROM UTRAN message	Successful response to a connection establishment request in the new cell.	Resume the connection to UTRAN
T310	Transmission of PUSCH CAPACITY REQUEST	Reception of PHYSICAL SHARED CHANNEL ALLOCATION	Transmit PUSCH CAPACITY REQUEST if V310 =< N310, else procedure stops.
T311	Reception of PHYSICAL SHARED CHANNEL ALLOCATION message with the CHOICE "*PUSCH allocation*" set to "PUSCH allocation pending".	Reception of PHYSICAL SHARED CHANNEL ALLOCATION message with CHOICE "*PUSCH allocation*" set to "PUSCH allocation assignment".	UE may initiate a PUSCH capacity request procedure.
T312	When the UE starts to establish dedicated CH	When the UE detects N312 "in sync" indication from L1.	The criteria for physical channel establishment failure is fulfilled
T313	When the UE detects consecutive N313 "out of sync" indication from L1.	When the UE detects consecutive N315 "in sync" indication from L1.	The criteria for Radio Link failure is fulfilled
T314	When the criteria for radio link failure are fulfilled. The timer is started if radio bearer(s) that are associated with T314 exist of if only RRC connection exists.	When the Cell Update procedure has been completed.	See subclause 8.3.1.13
T315	When the criteria for radio link failure are fulfilled. The timer is started only if radio bearer(s) that are associated with T315 exist.	When the Cell Update procedure has been completed.	See subclause 8.3.1.14
T316	When the UE detects "out of service area" in URA_PCH or CELL_PCH state	When the UE detects "in service area".	Initiate cell update procedure if in service area is detected. Otherwise start timer T317, transit to CELL_FACH state and initiate cell update procedure when the UE detects "in service area".

Timer	Start	Stop	At expiry
T317	When the T316 expires or when in CELL_FACH state, the UE detects "out of service area".	When the UE detects "in service area".	~~Transit to idle mode~~ T317 never expires.

3GPP TSG-RAN2 Meeting #37 **R2-031934**
Budapest, Hungary, 24th ~ 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2029** ⌘ **-** ⌘ Current version: **5.5.0** ⌘

*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:	⌘	Correcting value range of MAC-hs buffer ID
Source:	⌘	RAN WG2
Work item code:	⌘	HSDPA-L23
Date:	⌘	21/08/2003
Category:	⌘	**F**
Release:	⌘	Rel 5

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)*
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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:	⌘	Valeu range of MAC-hs buffer ID and that of Priority Queue ID are different although they refer to the same object.
Summary of change:	⌘	MAC-hs buffer ID is ranged from 1 to 8 in 25.331 while Priority Queue ID is ranged from 0 to 7 in 25.433. Since range (0..7) is more natural in binary scale, MAC-hs buffer ID is modified.
Consequences if not approved:	⌘	Inconsistency remains in the specification.

Clauses affected:	⌘	10.3.5.1a, 12.1

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

Other comments: ⌘

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10.3.5.1a Added or reconfigured MAC-d flow

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
MAC-hs queue list	OP	<1 to maxQueueID>			REL-5
>MAC-hs queue Id	MP		Integer(~~1..8~~0..7)		REL-5
>MAC-d Flow Identity	MP		MAC-d Flow Identity 10.3.5.7c		REL-5
>T1	MP		Integer(10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 200, 300, 400)	Timer (in milliseconds) when PDUs are released to the upper layers even though there are outstanding PDUs with lower TSN values.	REL-5
>MAC-hs window size	MP		Integer(4, 6, 8, 12, 16, 24, 32)		REL-5
>MAC-d PDU size Info	OP	<1 to max MACdPDUsizes>		Mapping of the different MAC-d PDU sizes configured for the HS-DSCH to the MAC-d PDU size index in the MAC-hs header.	REL-5
>>MAC-d PDU size	MP		Integer (1..5000)		REL-5
>>MAC-d PDU size index	MP		Integer(0..7)		REL-5

11.2 PDU definitions

```
MAC-hs-Queue    ::=                 SEQUENCE {
    mac-hsQueueId                       INTEGER(~~1...8~~0..7),
    mac-dFlowId                         MAC-d-FlowIdentity,
    reorderingReleaseTimer              T1-ReleaseTimer,
    mac-hsWindowSize                    MAC-hs-WindowSize,
    mac-d-PDU-SizeInfo-List             MAC-d-PDU-SizeInfo-List
```

3GPP TSG-RAN WG2 Meeting #37
Budapest, Hungary, August 25th-29th, 2003

Tdoc ⌘ R2-031935

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2030** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

*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 [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Correction of handling of IE "MAC-hs reset indicator" in Added or Reconfigured DL TrCH information
Source:	⌘	RAN WG2
Work item code:	⌘	HSDPA-L23
Date:	⌘	25/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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B *(addition of feature),*
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R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	There is a contradiction between procedure and tabular description for handling of IE "MAC-hs reset indicator" when receiving IE "Added or Reconfigured DL TrCH information": 1. The procedure description, clause 8.6.5.6 says, that MAC-hs entity should be reset, if IE "MAC-hs-reset indicator" is present. 2. The tabular description, clause 10.3.5.1 says, that IE "MAC-hs reset indicator" is mandatory present and that MAC-hs entity should only be reset, if IE "MAC-hs-reset indicator" has the value "TRUE". From the procedural description, it follows, that MAC-hs entity is reset after every message containing the IE "Added or Reconfigured DL TrCH information", which is in contradiction to tabular description.
Summary of change:	⌘	In clause 8.6.5.6, description of handling of IE "MAC-hs reset indicator" is changed this way, that MAC-hs entity shall only be reset, if IE "MAC-hs reset indicator" has the value "TRUE" according to tabular description. Note that tabular description of IE "MAC-hs reset indicator" in clause 10.3.5.1 "Added or Reconfigured DL TrCH information" and corresponding ASN.1 description remain unchanged
Consequences if not approved:	⌘	The specified UE behavior is unclear. The UE can not decide whether it shall reset the MAC-hs entity if the IE "MAC-hs reset indicator" is set to FALSE.

Clauses affected:	⌘	8.6.5.6

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

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Proposed Change

< MODIFIED SECTION >

8.6.5.6 Added or Reconfigured DL TrCH information

If the IE "Added or Reconfigured DL TrCH information" is included then for the transport channel identified by the IE "DL Transport Channel Identity" the UE shall:

1> if the choice "DL parameters" is set to 'explicit':

2> perform the actions for the IE "Transport Format Set" as specified in subclause 8.6.5.1.

1> if the choice "DL parameters" is set to 'same as uplink':

2> if the IE "UL Transport Channel Identity" indicates an existing or a new UL Transport Channel:

3> store as transport format for this transport channel the transport format associated with the transport channel identified by the IE "UL Transport Channel Identity".

2> else:

3> set the variable INVALID_CONFIGURATION to TRUE.

1> if the choice "DL parameters" is set to 'HSDSCH':

2> if the IE "HARQ Info" is included:

3> perform the actions specified in subclause 8.6.5.6b.

2> if the value of IE "MAC-hs reset indicator" is ~~present~~TRUE:

3> reset the MAC-hs entity[15].

1> if the IE "DCH quality target" is included:

2> perform the actions specified in subclause 8.6.5.4.

< REFERENCE SECTION >

10.3.5.1 Added or Reconfigured DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Downlink transport channel type	MP		Enumerated(DCH,DSCH		
			,HS-DSCH)		REL-5
DL Transport channel identity	MP		Transport channel identity 10.3.5.18		
	CV-*not HS-DSCH*				REL-5
CHOICE *DL parameters*					
>Explicit					
>>TFS	MP		Transport Format Set 10.3.5.23		
>SameAsUL					
>>Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only	
>>UL TrCH identity	MP		Transport channel identity 10.3.5.18	Same TFS applies as specified for indicated UL TrCH	
>HS-DSCH					REL-5
>>HARQ Info	OP		HARQ info 10.3.5.7a		REL-5
>>MAC-hs reset indicator	MP		Boolean	TRUE Indicates the MAC-hs entity needs to be reset.	REL-5
>>Added or reconfigured MAC-d flow	OP		Added or reconfigured MAC-d flow 10.3.5.1a		REL-5
DCH quality target	OP		Quality target 10.3.5.10		
Transparent mode signalling info	CV-*MessageType*		Transparent mode signalling info 10.3.5.17	This IE is not used in RB RELEASE message nor RB RECONFIGURATION message	

Condition	Explanation
MessageType	This IE is not needed in Radio Bearer Release message and Radio Bearer Reconfiguration message. Otherwise it is optional.
NotHS-DSCH	If the downlink transport channel type is DCH or DSCH then this IE is mandatory otherwise it is not needed.

3GPP TSG-RAN WG2 Meeting #37
Hungary, Budapest, 25th -29th August 2003

Tdoc ⌘R2-031968

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2035** ⌘ **rev** **1** ⌘ Current version: **5.5.0** ⌘

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Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	UE capability signalling for UMTS1800
Source:	⌘	RAN WG2
Work item code:	⌘	RInImp-UMTS18
Date:	⌘	27/06/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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)*
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R96	*(Release 1996)*
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R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The UE capability signalling does not enable UMTS1800 to be signalled. At RAN2#21 CR 873 was agreed which added this signalling but it was decided that it should not be implemented immediately in order to avoid creating a release 5 version of the specification that would need to be maintained. However, when the release 5 specification was created the change to introduce UMTS1800 was forgotten.
Summary of change:	⌘	A spare code point is defined to be used for UMTS1800.
Consequences if not approved:	⌘	Without this CR, it will not be possible for the UE to signal to the UTRAN that it supports the UMTS1800 band.

Clauses affected:	⌘	10.3.3.21a, 10.3.3.42a, 11.2			
Other specs affected:	⌘	**Y**	**N**	Other core specifications	⌘
				Test specifications	
				O&M Specifications	
Other comments:	⌘				

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10.3.3.21a Measurement capability extension

This IE may be used to replace the measurement capability information provided within IE "Measurement capability".

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
FDD measurements	MP	1 to <maxFreqBands FDD>			
>FDD Frequency band	MD		Enumerated(FDD2100, FDD1900, ~~)~~	The default value is the same as indicated in the IE "Frequency band" included in the IE " UE radio access capability extension". ~~Six~~ Five spare values are needed	
			FDD1800)		REL-5
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on the FDD frequency band indicated by the IE "FDD Frequency band"	
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on the FDD frequency band indicated by the IE "FDD Frequency band"	
TDD measurements	CV-*tdd_sup*	1 to <maxFreqBands TDD>			
>TDD Frequency band	MP		Enumerated(a, b, c)		
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on TDD frequency band indicated by the IE "TDD Frequency band"	
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on TDD frequency band indicated by the IE "TDD Frequency band"	
GSM measurements	CV-*gsm_sup*	1 to <maxFreqBands GSM>			
>GSM Frequency band	MP		Enumerated(GSM450, GSM480, GSM850, GSM900P, GSM900E, GSM1800, GSM1900)	as defined in [45]. Nine spare values are needed.	
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on GSM frequency band indicated by the IE "GSM Frequency band"	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on GSM frequency band indicated by the IE "GSM Frequency band"	
Multi-carrier measurement	CV-*mc_sup*				
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on multi-carrier	
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on multi-carrier	

Condition	Explanation
tdd_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "TDD" or "FDD/TDD". Otherwise this field is not needed in the message.
gsm_sup	The IE is mandatory present if the IE "Support of GSM" has the value TRUE. Otherwise this field is not needed in the message.
mc_sup	The IE is mandatory present if the IE "Support of multi-carrier" has the value TRUE. Otherwise this field is not needed in the message.

10.3.3.42a UE radio access capability extension

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Frequency band specific capability list	MP	1 to <maxFreqbandsFDD>			
>Frequency band	MP		Enumerated(FDD2100, FDD1900, ~~)~~	~~Six~~ Five spare values are needed	
			FDD1800)		REL-5
>RF capability FDD extension	MD		RF capability FDD extension 10.3.3.33a	the default values are the same values as in the immediately preceding IE "RF capability FDD extension"; the first occurrence is MP	
>Measurement capability extension	MP		Measurement capability extension 10.3.3.21a		

11.2 PDU definitions

```
RadioFrequencyBandFDD ::=           ENUMERATED {
                                        fdd2100,
                                        fdd1900,
                                        spare6fdd1800, spare5, spare4, spare3, spare2, spare1 }
```

3GPP TSG-RAN WG2 Meeting #37
Budapest, Hungary, 25-29 August 2003

Tdoc ⌘R2-031947

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2039** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

*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 [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Handover between UTRAN and GERAN Iu mode
Source:	⌘	RAN WG2
Work item code:	⌘	TEI5
Date:	⌘	12/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Handover procedure between GERAN Iu mode and UTRAN is missing.
Summary of change:	⌘	- RLC HFN mapping rule for SRB2 is defined because of the different length RLC sequence numbers in UTRAN and GERAN (GPRS and EGPRS). - NAS message retransmission requirements have been added. - Certain variables need to be internally transferred inside the UE/MS during handover to UTRAN. The list of variables is added. - The use of predefined and default configurations in handover from GERAN Iu mode to UTRAN has been defined. - GERAN Iu mode radio access capability has been added to IE "Inter-RAT UE radio access capability". - The use of "SRNS relocation info" in Handover to UTRAN is clarified.
Consequences if not approved:	⌘	Handover between GERAN Iu mode and UTRAN can not be performed.

Clauses affected:	⌘	2, 3.2, 8.1.8.2a.1, 8.1.10.2a.1, 8.2.2.2a, 8.2.2.3a, 8.2.2.9, 8.3.7.3, 8.3.7.4, 8.3.7.8, 8.4.0, 8.5.22, 8.6.3.5.2, 10.2.15, 10.2.16, 10.2.27, 10.3.8.7, 11.1, 11.2, 11.3, 11.5, 14.12.1, 14.12.4.2

	Y	N			
Other specs affected: ⌘	X		Other core specifications	⌘	44.118
		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.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 25.301: "Radio Interface Protocol Architecture".

[3] 3GPP TS 25.303: "Interlayer Procedures in Connected Mode".

[4] 3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode".

[5] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network Protocols; Stage 3".

[6] 3GPP TS 25.103: "RF parameters in support of RRM".

[7] 3GPP TS 25.215: "Physical layer – Measurements (FDD)".

[8] 3GPP TS 25.225: "Physical layer – Measurements (TDD)".

[9] 3GPP TS 25.401: "UTRAN overall description".

[10] 3GPP TS 25.402: "Synchronization in UTRAN; Stage 2".

[11] 3GPP TS 23.003: "Numbering, addressing and identification".

[12] ICD-GPS-200: "Navstar GPS Space Segment/Navigation User Interface".

[13] RTCM-SC104: "RTCM Recommended Standards for Differential GNSS Service (v.2.2)".

[14] 3GPP TR 25.921: "Guidelines and principles for protocol description and error handling".

[15] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[16] 3GPP TS 25.322: "Radio Link Control (RLC) protocol specification".

[17] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[18] 3GPP TS 25.305: "Stage 2 Functional Specification of UE Positioning in UTRAN".

[19] 3GPP TS 25.133: "Requirements for Support of Radio Resource Management (FDD)".

[20] 3GPP TS 25.123: "Requirements for Support of Radio Resource Management (TDD)".

[21] 3GPP TS 25.101: "UE Radio Transmission and Reception (FDD)".

[22] 3GPP TS 25.102: "UE Radio Transmission and Reception (TDD)".

[23] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".

[24] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[25] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode".

[26] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[27] 3GPP TS 25.212: "Multiplexing and channel coding (FDD)".

[28] 3GPP TS 25.213: "Spreading and modulation (FDD)".

[29] 3GPP TS 25.214: "Physical layer procedures (FDD)".

[30] 3GPP TS 25.221: "Physical channels and mapping of transport channels onto physical channels (TDD)".

[31] 3GPP TS 25.222: "Multiplexing and channel coding (TDD)".

[32] 3GPP TS 25.223: "Spreading and modulation (TDD)".

[33] 3GPP TS 25.224: "Physical Layer Procedures (TDD)".

[34] 3GPP TS 25.302: "Services provided by the physical layer ".

[35] 3GPP TS 25.306 "UE Radio Access Capabilities".

[36] 3GPP TS 25.323: "Packet Data Convergence Protocol (PDCP) Specification".

[37] 3GPP TS 25.324: "Broadcast/Multicast Control BMC".

[38] 3GPP TR 25.922: "Radio resource management strategies".

[39] 3GPP TR 25.925: "Radio interface for broadcast/multicast services".

[40] 3GPP TS 33.102: "3G Security; Security Architecture".

[41] 3GPP TS 34.108: "Common Test Environments for User Equipment (UE) Conformance Testing".

[42] 3GPP TS 34.123-2: "User Equipment (UE) conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification".

[43] 3GPP TS 44.018: "Mobile radio interface layer 3 specification; Radio Resource Control Protocol".

[44] 3GPP TS 44.060: "General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control/Medium Access Control (RLC/MAC) protocol".

[45] 3GPP TS 45.005: "Radio transmission and reception".

[46] 3GPP TS 45.008: "Radio subsystem link control".

[47] ITU-T Recommendation X.680 (12/97) "Information Technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[48] ITU-T Recommendation X.681 (12/97) "Information Technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[49] ITU-T Recommendation X.691 (12/97) "Information technology - ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)".

[50] 3GPP TS 31.102: "Characteristics of the USIM Application".

[51] 3GPP TS 25.308: "High Speed Downlink Packet Access (HSDPA): Overall Description; Stage 2".

[52] IANA ROHC profile identifier definition (http://www.iana.org/assignments/rohc-pro-ids).

[53] 3GPP TS 44.118: "Mobile radio interface layer 3 specification; Radio Resource Control Protocol, Iu Mode".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] apply.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACK	Acknowledgement
AICH	Acquisition Indicator CHannel
AM	Acknowledged Mode
AS	Access Stratum
ASC	Access Service Class
ASN.1	Abstract Syntax Notation.1
BCCH	Broadcast Control Channel
BCFE	Broadcast Control Functional Entity
BER	Bit Error Rate
BLER	BLock Error Rate
BSS	Base Station Sub-system
CCCH	Common Control Channel
CCPCH	Common Control Physical CHannel
CH	Conditional on history
CM	Connection Management
CN	Core Network
CPCH	Common Packet CHannel
C-RNTI	Cell RNTI
CTCH	Common Traffic CHannel
CTFC	Calculated Transport Format Combination
CV	Conditional on value
DCA	Dynamic Channel Allocation
DCCH	Dedicated Control Channel
DCFE	Dedicated Control Functional Entity
DCH	Dedicated Channel
DC-SAP	Dedicated Control SAP
DGPS	Differential Global Positioning System
DL	Downlink
DRAC	Dynamic Resource Allocation Control
DSCH	Downlink Shared Channel
DTCH	Dedicated Traffic Channel
FACH	Forward Access Channel
FDD	Frequency Division Duplex
GC-SAP	General Control SAP
GERAN	GSM/EDGE Radio Access Network
G-RNTI	GERAN Radio Network Temporary Identity
HCS	Hierarchical Cell Structure
HFN	Hyper Frame Number
H-RNTI	HS-DSCH RNTI
HS-DSCH	High Speed Downlink Shared Channel
ID	Identifier
IDNNS	Intra Domain NAS Node Selector
IE	Information element
IETF	Internet Engineering Task Force
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
ISCP	Interference on Signal Code Power
L1	Layer 1

L2	Layer 2
L3	Layer 3
LAI	Location Area Identity
MAC	Media Access Control
MCC	Mobile Country Code
MD	Mandatory default
MM	Mobility Management
MNC	Mobile Network Code
MP	Mandatory present
NACC	Network Assisted Cell Change
NAS	Non Access Stratum
Nt-SAP	Notification SAP
NW	Network
OP	Optional
PCCH	Paging Control Channel
PCH	Paging Channel
PDCP	Packet Data Convergence Protocol
PDSCH	Physical Downlink Shared Channel
PDU	Protocol Data Unit
PLMN	Public Land Mobile Network
PNFE	Paging and Notification Control Functional Entity
PRACH	Physical Random Access CHannel
PSI	Packet System Information
P-TMSI	Packet Temporary Mobile Subscriber Identity
PUSCH	Physical Uplink Shared Channel
QoS	Quality of Service
RAB	Radio access bearer
RACH	Random Access CHannel
RAI	Routing Area Identity
RAT	Radio Access Technology
RB	Radio Bearer
RFE	Routing Functional Entity
RL	Radio Link
RLC	Radio Link Control
RNC	Radio Network Controller
RNTI	Radio Network Temporary Identifier
RRC	Radio Resource Control
RSCP	Received Signal Code Power
RSSI	Received Signal Strength Indicator
SAP	Service Access Point
SCFE	Shared Control Function Entity
SCTD	Space Code Transmit Diversity
SF	Spreading Factor
SHCCH	Shared Control Channel
SI	System Information
SIR	Signal to Interference Ratio
S-RNTI	SRNC - RNTI
SSDT	Site Selection Diversity Transmission
TDD	Time Division Duplex
TF	Transport Format
TFCS	Transport Format Combination Set
TFS	Transport Format Set
TM	Transparent Mode
TME	Transfer Mode Entity
TMSI	Temporary Mobile Subscriber Identity
Tr	Transparent
Tx	Transmission
UE	User Equipment
UL	Uplink
UM	Unacknowledged Mode
URA	UTRAN Registration Area
U-RNTI	UTRAN-RNTI

USCH	Uplink Shared Channel
UTRAN	Universal Terrestrial Radio Access Network

8.1.8 Initial Direct transfer

Figure 8.1.8-1: Initial Direct transfer in the uplink, normal flow

8.1.8.1 General

The initial direct transfer procedure is used in the uplink to establish a signalling connection. It is also used to carry an initial upper layer (NAS) message over the radio interface.

8.1.8.2 Initiation of Initial direct transfer procedure in the UE

In the UE, the initial direct transfer procedure shall be initiated, when the upper layers request establishment of a signalling connection. This request also includes a request for the transfer of a NAS message.

Upon initiation of the initial direct transfer procedure when the UE is in idle mode, the UE shall:

1> set the variable ESTABLISHMENT_CAUSE to the cause for establishment indicated by upper layers;

1> perform an RRC connection establishment procedure, according to subclause 8.1.3;

1> if the RRC connection establishment procedure was not successful:

2> indicate failure to establish the signalling connection to upper layers and end the procedure.

1> when the RRC connection establishment procedure is completed successfully:

2> continue with the initial direct transfer procedure as below.

Upon initiation of the initial direct transfer procedure when the UE is in CELL_PCH or URA_PCH state, the UE shall:

1> perform a cell update procedure, according to subclause 8.3.1, using the cause "uplink data transmission";

1> when the cell update procedure completed successfully:

2> continue with the initial direct transfer procedure as below.

The UE shall, in the INITIAL DIRECT TRANSFER message:

1> set the IE "NAS message" as received from upper layers; and

1> set the IE "CN domain identity" as indicated by the upper layers; and

1> set the IE "Intra Domain NAS Node Selector" as follows:

2> derive the IE "Intra Domain NAS Node Selector" from TMSI/PMTSI, IMSI, or IMEI; and

2> provide the coding of the IE "Intra Domain NAS Node Selector" according to the following priorities:

1. derive the routing parameter for IDNNS from TMSI (CS domain) or PTMSI (PS domain) whenever a valid TMSI/PTMSI is available;

2. base the routing parameter for IDNNS on IMSI when no valid TMSI/PTMSI is available;

3. base the routing parameter for IDNNS on IMEI only if no (U)SIM is inserted in the UE.

1> calculate the START according to subclause 8.5.9 for the CN domain as set in the IE "CN Domain Identity"; and

1> include the calculated START value for that CN domain in the IE "START".

The UE shall:

1> transmit the INITIAL DIRECT TRANSFER message on the uplink DCCH using AM RLC on signalling radio bearer RB3;

1> when the INITIAL DIRECT TRANSFER message has been submitted to lower layers for transmission:

2> confirm the establishment of a signalling connection to upper layers; and

2> add the signalling connection with the identity indicated by the IE "CN domain identity" in the variable ESTABLISHED_SIGNALLING_CONNECTIONS.

1> when the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC:

2> the procedure ends.

When not stated otherwise elsewhere, the UE may also initiate the initial direct transfer procedure when another procedure is ongoing, and in that case the state of the latter procedure shall not be affected.

A new signalling connection request may be received from upper layers during transition to idle mode. In those cases, from the time of the indication of release to upper layers until the UE has entered idle mode, any such upper layer request to establish a new signalling connection shall be queued. This request shall be processed after the UE has entered idle mode.

8.1.8.2a RLC re-establishment or inter-RAT change

If a re-establishment of RLC on signalling radio bearer RB3 occurs before the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC, the UE shall:

1> retransmit the INITIAL DIRECT TRANSFER message on the uplink DCCH using AM RLC on signalling radio bearer RB3.

If an Inter-RAT handover from UTRAN procedure occurs before the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC, for messages with the IE "CN domain identity" set to "CS domain", the UE shall:

1> retransmit the NAS message as specified in subclause 8.3.7.4.

8.1.8.2a.1 Inter-RAT handover from UTRAN to GERAN *Iu mode*

If an Inter-RAT handover from UTRAN to GERAN *Iu mode* occurs before the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC, for messages for all CN domains, the UE shall:

1> retransmit the NAS message as specified in subclause 8.3.7.4.

8.1.8.2b Abortion of signalling connection establishment

If the UE receives a request from upper layers to release (abort) the signalling connection for the CN domain for which the initial direct transfer procedure is ongoing, the UE shall:

1> if the UE has not yet entered UTRA RRC connected mode:

2> abort the RRC connection establishment procedure as specified in subclause 8.1.3;

the procedure ends.

8.1.8.3 Reception of INITIAL DIRECT TRANSFER message by the UTRAN

On reception of the INITIAL DIRECT TRANSFER message the NAS message should be routed using the IE "CN Domain Identity". UTRAN may also use the IE "Intra Domain NAS Node Selector" for routing among the CN nodes for the addressed CN domain.

If no signalling connection exists towards the chosen node, then a signalling connection is established.

When the UTRAN receives an INITIAL DIRECT TRANSFER message, it shall not affect the state of any other ongoing RRC procedures, when not stated otherwise elsewhere.

The UTRAN should:

1> set the START value for the CN domain indicated in the IE "CN domain identity" to the value of the IE "START".

8.1.10 Uplink Direct transfer

Figure 8.1.10-1: Uplink Direct transfer, normal flow

8.1.10.1 General

The uplink direct transfer procedure is used in the uplink direction to carry all subsequent upper layer (NAS) messages over the radio interface belonging to a signalling connection.

8.1.10.2 Initiation of uplink direct transfer procedure in the UE

In the UE, the uplink direct transfer procedure shall be initiated when the upper layers request a transfer of a NAS message on an existing signalling connection. When not stated otherwise elsewhere, the UE may initiate the uplink direct transfer procedure when another procedure is ongoing, and in that case the state of the latter procedure shall not be affected.

Upon initiation of the uplink direct transfer procedure in CELL_PCH or URA_PCH state, the UE shall:

1> perform a cell update procedure, according to subclause 8.3.1, using the cause "uplink data transmission";

1> when the cell update procedure has been completed successfully:

2> continue with the uplink direct transfer procedure as below.

The UE shall transmit the UPLINK DIRECT TRANSFER message on the uplink DCCH using AM RLC on signalling radio bearer RB3 or signalling radio bearer RB4. The UE shall:

1> if upper layers indicate "low priority" for this message:

2> select signalling radio bearer RB4, if available. Specifically, for a GSM-MAP based CN, signalling radio bearer RB4 shall, if available, be selected when "SAPI 3" is requested;

2> select signalling radio bearer RB3 when signalling radio bearer RB4 is not available;

1> if upper layers indicate "high priority" for this message:

2> select signalling radio bearer RB3. Specifically, for a GSM-MAP based CN, signalling radio bearer RB3 shall be selected when "SAPI 0" is requested.

The UE shall set the IE "NAS message" as received from upper layers and set the IE "CN domain identity" as indicated by the upper layers.

When the successful delivery of the UPLINK DIRECT TRANSFER message has been confirmed by RLC the procedure ends.

8.1.10.2a RLC re-establishment or inter-RAT change

If signalling radio bearer RB n (where n equals to 3 or 4) was used when transmitting the UPLINK DIRECT TRANSFER message and a re-establishment of RLC on the same signalling radio bearer RB n occurs before the successful delivery of the UPLINK DIRECT TRANSFER message has been confirmed by RLC, the UE shall:

1> retransmit the UPLINK DIRECT TRANSFER message on the uplink DCCH using AM RLC on signalling radio bearer RB n.

If an Inter-RAT handover from UTRAN procedure occurs before the successful delivery of the UPLINK DIRECT TRANSFER message has been confirmed by RLC, for messages with the IE "CN domain identity" set to "CS domain", the UE shall:

1> retransmit the NAS message as specified in subclause 8.3.7.4.

8.1.10.2a.1 Inter-RAT handover from UTRAN to GERAN *Iu mode*

If an Inter-RAT handover from UTRAN to GERAN *Iu mode* occurs before the successful delivery of the UPLINK DIRECT TRANSFER message has been confirmed by RLC, for messages for all CN domains, the UE shall:

1> retransmit the NAS message as specified in subclause 8.3.7.4.

8.1.10.3 Reception of UPLINK DIRECT TRANSFER message by the UTRAN

On reception of the UPLINK DIRECT TRANSFER message the NAS message should be routed using the value indicated in the IE "CN domain identity".

When the UTRAN receives an UPLINK DIRECT TRANSFER message, it shall not affect the state of any other ongoing RRC procedures, when not stated otherwise elsewhere.

8.2.2 Reconfiguration procedures

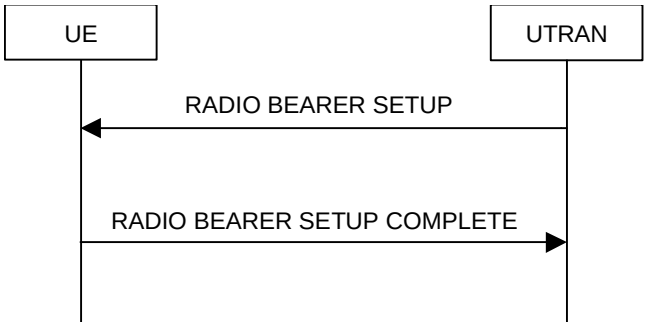

Figure 8.2.2-1: Radio Bearer Establishment, normal case

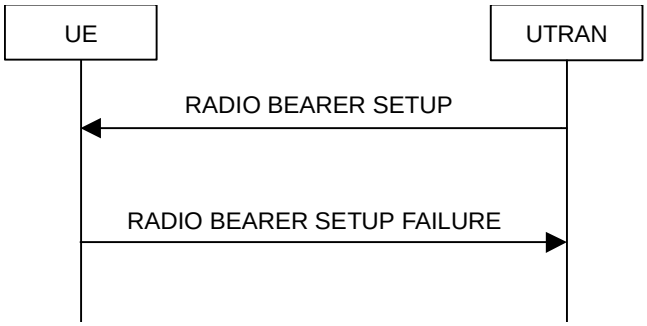

Figure 8.2.2-2: Radio Bearer Establishment, failure case

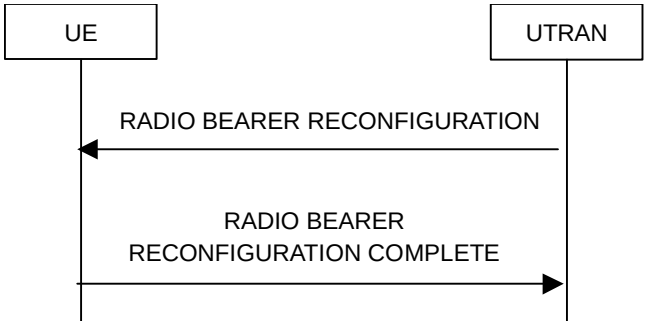

Figure 8.2.2-3: Radio bearer reconfiguration, normal flow

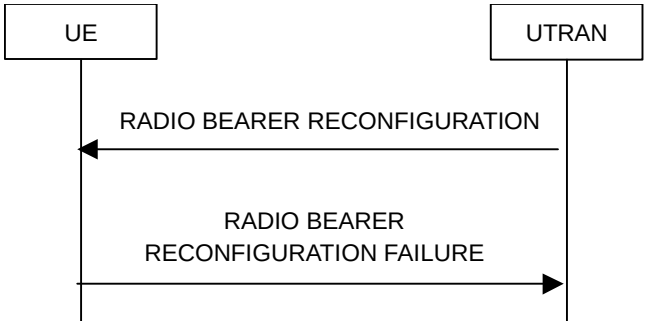

Figure 8.2.2-4: Radio bearer reconfiguration, failure case

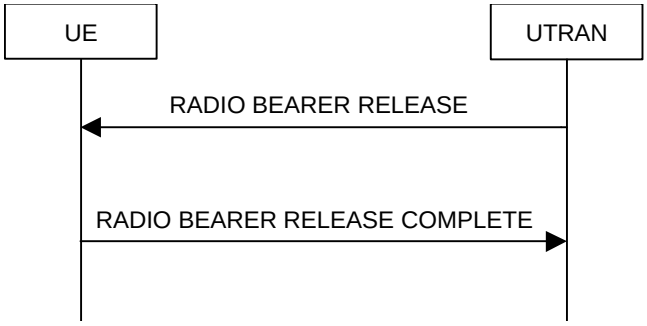

Figure 8.2.2-5: Radio Bearer Release, normal case

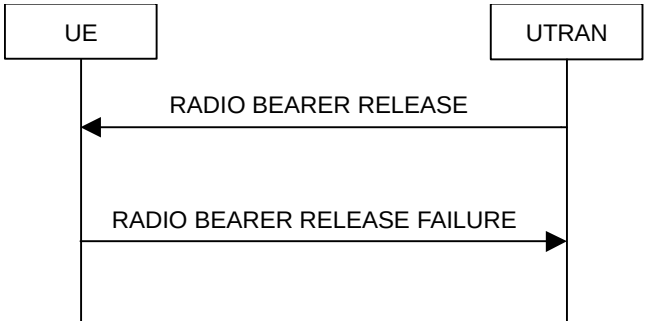

Figure 8.2.2-6: Radio Bearer Release, failure case

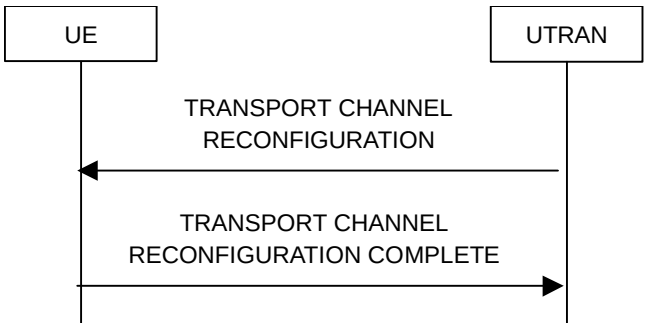

Figure 8.2.2-7: Transport channel reconfiguration, normal flow

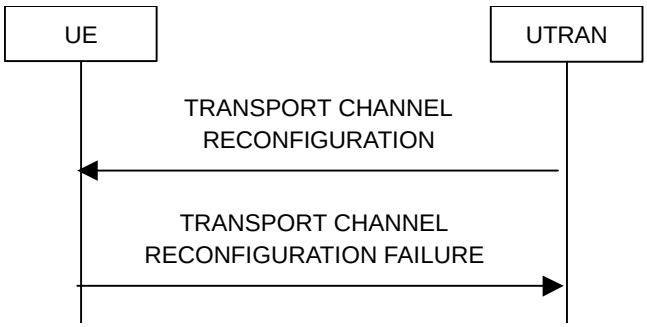

Figure 8.2.2-8: Transport channel reconfiguration, failure case

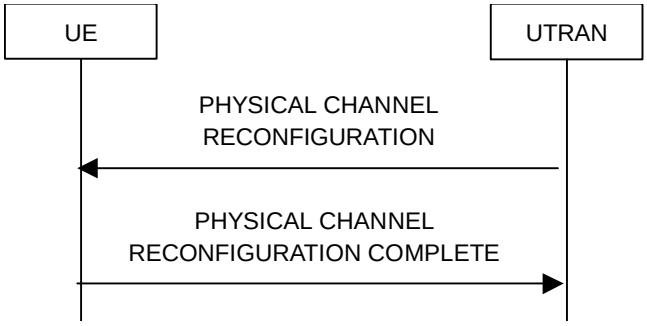

Figure 8.2.2-9: Physical channel reconfiguration, normal flow

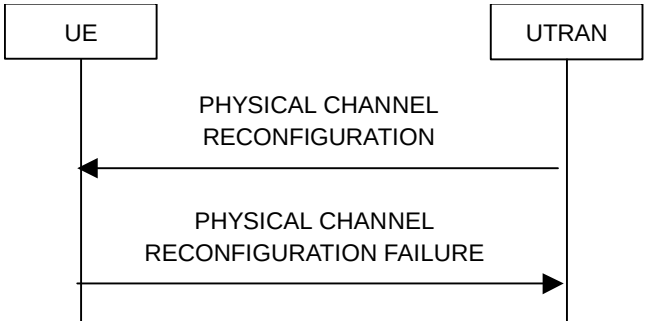

Figure 8.2.2-10: Physical channel reconfiguration, failure case

8.2.2.1 General

Reconfiguration procedures include the following procedures:

- the radio bearer establishment procedure;
- radio bearer reconfiguration procedure;
- the radio bearer release procedure;
- the transport channel reconfiguration procedure; and
- the physical channel reconfiguration procedure.

The radio bearer establishment procedure is used to establish new radio bearer(s).

The radio bearer reconfiguration procedure is used to reconfigure parameters for a radio bearer.

The radio bearer release procedure is used to release radio bearer(s).

The transport channel reconfiguration procedure is used to reconfigure transport channel parameters.

The physical channel reconfiguration procedure is used to establish, reconfigure and release physical channels.

While performing any of the above procedures, these procedures may perform a hard handover (subclause 8.3.5) and/or an HS-DSCH cell change. The reconfiguration procedures are also used to change the feedback configuration for HS-DSCH.

8.2.2.2 Initiation

To initiate any one of the reconfiguration procedures, UTRAN should:

1> configure new radio links in any new physical channel configuration;

1> start transmission and reception on the new radio links;

1> for a radio bearer establishment procedure:

2> transmit a RADIO BEARER SETUP message on the downlink DCCH using AM or UM RLC;

2> if signalling radio bearer RB4 is setup with this procedure and signalling radio bearers RB1-RB3 were already established prior to the procedure:

3> if the variable "LATEST_CONFIGURED_CN_DOMAIN" has been initialised:

4> connect any radio bearers setup by the same message as signalling radio bearer RB4 to the CN domain indicated in the variable "LATEST CONFIGURED CN DOMAIN".

1> for a radio bearer reconfiguration procedure:

2> transmit a RADIO BEARER RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

1> for a radio bearer release procedure:

2> transmit a RADIO BEARER RELEASE message on the downlink DCCH using AM or UM RLC.

1> for a transport channel reconfiguration procedure:

2> transmit a TRANSPORT CHANNEL RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

1> for a physical channel reconfiguration procedure:

2> transmit a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

1> if the reconfiguration procedure is simultaneous with SRNS relocation procedure:

2> if the transmitted message is a RADIO BEARER RECONFIGURATION:

3> include the IE "New U-RNTI".

2> else:

3> include the IE "Downlink counter synchronisation info".

2> if ciphering and/or integrity protection are activated:

3> include new ciphering and/or integrity protection configuration information to be used after reconfiguration.

2> use the downlink DCCH using AM RLC.

1> if transport channels are added, reconfigured or deleted in uplink and/or downlink:

2> set TFCS according to the new transport channel(s).

1> if transport channels are added or deleted in uplink and/or downlink, and RB Mapping Info applicable to the new configuration has not been previously provided to the UE, the UTRAN should:

2> send the RB Mapping Info for the new configuration.

In the Radio Bearer Reconfiguration procedure UTRAN may indicate that uplink transmission shall be stopped or continued on certain radio bearers. Uplink transmission on a signalling radio bearer used by the RRC signalling (signalling radio bearer RB1 or signalling radio bearer RB2) should not be stopped.

NOTE 1: The Release '99 RADIO BEARER RECONFIGURATION message always includes the IE "RB information to reconfigure", even if UTRAN does not require the reconfiguration of any RB. In these cases, UTRAN may include only the IE "RB identity" within the IE "RB information to reconfigure".

NOTE 2: The Release '99 RADIO BEARER RECONFIGURATION message always includes the IE "Downlink information per radio link list", even if UTRAN does not require the reconfiguration of any RL. In these cases, UTRAN may re-send the currently assigned values for the mandatory IEs included within the IE "Downlink information per radio link list ".

NOTE 3: The Release '99 RADIO BEARER RECONFIGURATION message always includes the IE "Primary CPICH Info" (FDD) or IE "Primary CCPCH Info" (TDD) within IE "Downlink information per radio link list". This implies that in case UTRAN applies the RADIO BEARER RECONFIGURATION message to move the UE to CELL_FACH state, it has to indicate a cell. However, UTRAN may indicate any cell; the UE anyhow performs cell selection and notifies UTRAN if it selects another cell than indicated by UTRAN.

If the IE "Activation Time" is included, UTRAN should set it to a value taking the UE performance requirements into account.

UTRAN should take the UE capabilities into account when setting the new configuration.

If the message is used to initiate a transition from CELL_DCH to CELL_FACH state, the UTRAN may assign a CPCH configuration to be used in that cell by the UE. UTRAN may also assign a C-RNTI to be used in that cell by the UE.

8.2.2.2a Initiation of handover from GERAN *Iu mode*

To initiate the handover from GERAN *Iu mode*, UTRAN should:

1> provide a RADIO BEARER RECONFIGURATION message to be encapsulated in INTERSYSTEM HANDOVER TO UTRAN COMMAND message, sent on the downlink SRB2 in GERAN *Iu mode*, as specified in [53].

1> in case UTRAN decides to use a predefined or default radio configuration that is stored in the UE, it should include the following information in the RADIO BEARER RECONFIGURATION message.

- the IE "Predefined configuration identity", to indicate which pre-defined configuration of RB, transport channel and physical channel parameters shall be used; or
- the IE "Default configuration mode" and IE "Default configuration identity", to indicate which default configuration of RB, transport channel and physical channel parameters shall be used;
- PhyCH information elements.

8.2.2.3 Reception of RADIO BEARER SETUP or RADIO BEARER RECONFIGURATION or RADIO BEARER RELEASE or TRANSPORT CHANNEL RECONFIGURATION or PHYSICAL CHANNEL RECONFIGURATION message by the UE

The UE shall:

1> be able to receive any of the following messages:

2> RADIO BEARER SETUP message; or

2> RADIO BEARER RECONFIGURATION message; or

2> RADIO BEARER RELEASE message; or

2> TRANSPORT CHANNEL RECONFIGURATION message; or

2> PHYSICAL CHANNEL RECONFIGURATION message;

1> perform a hard handover and apply physical layer synchronisation procedure A as specified in [29], even if no prior UE measurements have been performed on the target cell and/or frequency.

If the UE receives:

- a RADIO BEARER SETUP message; or
- a RADIO BEARER RECONFIGURATION message; or
- a RADIO BEARER RELEASE message; or
- a TRANSPORT CHANNEL RECONFIGURATION message; or

- a PHYSICAL CHANNEL RECONFIGURATION message:

it shall:

1> set the variable ORDERED_RECONFIGURATION to TRUE;

1> if the UE will enter the CELL_DCH state from any state other than CELL_DCH state at the conclusion of this procedure:

2> perform the physical layer synchronisation procedure A as specified in [29] (FDD only).

1> act upon all received information elements as specified in subclause 8.6, unless specified in the following and perform the actions below.

The UE may:

1> maintain a list of the set of cells to which the UE has Radio Links if the IE "Cell ID" is present.

The UE may first release the physical channel configuration used at reception of the reconfiguration message. The UE shall then:

1> in FDD, if the IE "PDSCH code mapping" is included but the IE "PDSCH with SHO DCH Info" is not included and if the DCH has only one link in its active set:

2> act upon the IE "PDSCH code mapping" as specified in subclause 8.6; and

2> infer that the PDSCH will be transmitted from the cell from which the downlink DPCH is transmitted.

1> enter a state according to subclause 8.6.3.3.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

1> handle the message as if IE "RB information to reconfigure" was absent.

NOTE: The RADIO BEARER RECONFIGURATION message always includes the IE "RB information to reconfigure". UTRAN has to include it even if it does not require the reconfiguration of any RB.

If after state transition the UE enters CELL_DCH state, the UE shall, after the state transition:

1> remove any C-RNTI from MAC;

1> clear the variable C_RNTI.

If after state transition the UE leaves CELL_DCH state, the UE shall, after the state transition:

1> stop any HS-DSCH reception procedures according to the stored HS-PDSCH configuration;

1> clear any stored HS-PDSCH configuration;

1> remove any H-RNTI stored;

1> clear the variable H_RNTI;

1> set the variable HS_DSCH_RECEPTION to FALSE.

In FDD, if after state transition the UE leaves CELL_DCH state, the UE shall, after the state transition:

1> remove any DSCH-RNTI from MAC;

1> clear the variable DSCH_RNTI.

If the UE was in CELL_DCH state upon reception of the reconfiguration message and remains in CELL_DCH state, the UE shall:

1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;

1> if "DPCH frame offset" is included for one or more RLs in the active set:

2> use its value to determine the beginning of the DPCH frame in accordance with the following:

3> if the received IE "DPCH frame offset" is across the value range border compared to the DPCH frame offset currently used by the UE:

4> consider it to be a request to adjust the timing with 256 chips across the frame border (e.g. if the UE receives value 0 while the value currently used is 38144 consider this as a request to adjust the timing with +256 chips).

3> if after taking into account value range borders, the received IE "DPCH frame offset" corresponds to a request to adjust the timing with a step exceeding 256 chips:

4> set the variable INVALID_CONFIGURATION to TRUE.

3> and the procedure ends.

2> adjust the radio link timing accordingly.

If after state transition the UE enters CELL_FACH state, the UE shall, after the state transition:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to [4] on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to [4].

1> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):

2> initiate a cell update procedure according to subclause 8.3.1 using the cause "Cell reselection";

2> when the cell update procedure completed successfully:

3> if the UE is in CELL_PCH or URA_PCH state:

4> initiate a cell update procedure according to subclause 8.3.1 using the cause "Uplink data transmission";

4> proceed as below.

1> start timer T305 using its initial value if timer T305 is not running and if periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" in system information block type 1;

1> select PRACH according to subclause 8.5.17;

1> select Secondary CCPCH according to subclause 8.5.19;

1> use the transport format set given in system information;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> ignore that IE and stop using DRX.

1> if the contents of the variable C_RNTI is empty:

2> perform a cell update procedure according to subclause 8.3.1 using the cause "Cell reselection";

2> when the cell update procedure completed successfully:

3> if the UE is in CELL_PCH or URA_PCH state:

4> initiate a cell update procedure according to subclause 8.3.1 using the cause "Uplink data transmission";

4> proceed as below.

If the UE was in CELL_FACH state upon reception of the reconfiguration message and remains in CELL_FACH state, the UE shall:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to [4] on that frequency;

2> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):

3> initiate a cell update procedure according to subclause 8.3.1 using the cause "cell reselection";

3> when the cell update procedure completed successfully:

4> proceed as below.

The UE shall transmit a response message as specified in subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

1> if the received reconfiguration message included the IE "Downlink counter synchronisation info"; or

1> if the received reconfiguration message is a RADIO BEARER RECONFIGURATION and the IE "New U-RNTI" is included:

2> if the variable PDCP_SN_INFO is empty:

3> configure the corresponding RLC entity for all AM and UM radio bearers and AM and UM signalling radio bearers except RB2 to "stop".

2> else:

3> configure the RLC entity for signalling radio bearers RB1, RB3 and RB4 to "stop";

3> configure the RLC entity for UM and AM radio bearers for which the IE "PDCP SN Info" is not included to "stop".

2> re-establish RB2;

2> for the downlink and the uplink, apply the ciphering configuration as follows:

3> if the received re-configuation message included the IE "Ciphering Mode Info":

4> use the ciphering configuration in the received message when transmitting the response message.

3> if the ciphering configuration for RB2 from a previously received SECURITY MODE COMMAND has not yet been applied because the activation times not having been reached:

4> if the previous SECURITY MODE COMMAND was received due to new keys being received:

5> consider the new ciphering configuration to include the received new keys.

4> if the ciphering configuration for RB2 from a previously received SECURITY MODE COMMAND has not yet been applied because of the corresponding activation times not having been reached and the previous SECURITY MODE COMMAND caused a change in LATEST_CONFIGURED_CN_DOMAIN:

5> consider the new ciphering configuration to include the keys associated with the LATEST_CONFIGURED_CN_DOMAIN;

4> apply the new ciphering configuration immediately following RLC re-establishment.

3> else:

4> continue using the current ciphering configuration.

2> set the new uplink and downlink HFN of RB2 to MAX(uplink HFN of RB2, downlink HFN of RB2);

2> increment by one the downlink and uplink HFN values for RB2;

2> calculate the START value according to subclause 8.5.9;

2> include the calculated START values for each CN domain in the IE "START list" in the IE "Uplink counter synchronisation info".

1> if the received reconfiguration message did not include the IE "Downlink counter synchronisation info":

2> if the variable START_VALUE_TO_TRANSMIT is set:

3> include and set the IE "START" to the value of that variable.

2> if the variable START_VALUE_TO_TRANSMIT is not set and the IE "New U-RNTI" is included:

3> calculate the START value according to subclause 8.5.9;

3> include the calculated START values for each CN domain in the IE "START list" in the IE "Uplink counter synchronisation info".

2> if the received reconfiguration message caused a change in the RLC size for any RB using RLC-AM:

3> calculate the START value according to subclause 8.5.9;

3> include the calculated START values for the CN domain associated with the corresponding RB identity in the IE "START list" in the IE "Uplink counter synchronisation info".

1> if the received reconfiguration message contained the IE "Ciphering mode info" or contained the IE "Integrity protection mode info":

2> set the IE "Status" in the variable SECURITY_MODIFICATION for all the CN domains in the variable SECURITY_MODIFICATION to "Affected".

1> if the received reconfiguration message contained the IE "Ciphering mode info":

2> include and set the IE "Radio bearer uplink ciphering activation time info" to the value of the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.

1> if the received reconfiguration message did not contain the IE "Ciphering activation time for DPCH" in IE "Ciphering mode info":

2> if prior to this procedure there exist no transparent mode RLC radio bearers:

3> if, at the conclusion of this procedure, the UE will be in CELL_DCH state; and

3> if, at the conclusion of this procedure, at least one transparent mode RLC radio bearer exists:

4> include the IE "COUNT-C activation time" and specify a CFN value for this IE that is a multiple of 8 frames (CFN mod 8 = 0) and lies at least 200 frames ahead of the CFN in which the response message is first transmitted.

NOTE: UTRAN should not include the IE "Ciphering mode info" in any reconfiguration message unless it is also used to perform an SRNS relocation with change of ciphering algorithm.

1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry;

1> if the variable PDCP_SN_INFO is not empty:

2> include the IE "RB with PDCP information list" and set it to the value of the variable PDCP_SN_INFO.

1> in TDD, if the procedure is used to perform a handover to a cell where timing advance is enabled, and the UE can calculate the timing advance value in the new cell (i.e. in a synchronous TDD network):

2> set the IE "Uplink Timing Advance" according to subclause 8.6.6.26.

1> if the IE "Integrity protection mode info" was present in the received reconfiguration message:

2> start applying the new integrity protection configuration in the uplink for signalling radio bearer RB2 from and including the transmitted response message.

If after state transition the UE enters CELL_PCH or URA_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to [4] on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to [4].

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C_RNTI;

1> start timer T305 using its initial value if timer T305 is not running and if periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" in system information block type 1;

1> select Secondary CCPCH according to subclause 8.5.19;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in subclause 8.6.3.2.

1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the UE enters CELL_PCH state from CELL_DCH state, and the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):

2> initiate a cell update procedure according to subclause 8.3.1 using the cause "cell reselection";

2> when the cell update procedure completed successfully:

3> the procedure ends.

1> if the UE enters CELL_PCH state from CELL_FACH state, and the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE:

2> initiate a cell update procedure according to subclause 8.3.1 using the cause "cell reselection";

2> when the cell update procedure is successfully completed:

3> the procedure ends.

1> if the UE enters URA_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to subclause 8.3.1 is fulfilled:

2> initiate a URA update procedure according to subclause 8.3.1 using the cause "URA reselection";

2> when the URA update procedure is successfully completed:

3> the procedure ends.

8.2.2.3a Reception of RADIO BEARER RECONFIGURATION message by the UE performing handover from GERAN *Iu mode*

If the UE is performing handover from GERAN *Iu mode*, the UE shall, in addition to the actions in 8.2.2.3:

1> if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Predefined configuration":

2> initiate the radio bearer and transport channel configuration in accordance with the predefined parameters identified by the IE "Predefined configuration identity";

2> initiate the physical channels in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity" and the received physical channel information elements;

2> store information about the established radio access bearers and radio bearers according to the IE "Predefined configuration identity"; and

1> if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Default configuration":

2> initiate the radio bearer and transport channel configuration in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity";

2> initiate the physical channels in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity" and the received physical channel information elements;

NOTE: IE "Default configuration mode" specifies whether the FDD or TDD version of the default configuration shall be used.

1> if IE "Specification mode" is set to "Complete specification":

2> initiate the radio bearer, transport channel and physical channel configuration in accordance with the received radio bearer, transport channel and physical channel information elements.

1> perform an open loop estimation to determine the UL transmission power according to subclause 8.5.3.

1> set the following variables equal to the corresponding variables in GERAN *Iu mode:*

CIPHERING_STATUS

ESTABLISHED_RABS

ESTABLISHED_SIGNALLING_CONNECTIONS

INTEGRITY_PROTECTION_INFO

INTER_RAT_HANDOVER_INFO_TRANSFERRED

LATEST_CONFIGURED_CN_DOMAIN

START_THRESHOLD

UE_CAPABILITY_TRANSFERRED.

1> set the new uplink and downlink HFN of RB2 to MSB_{20}(MAX(uplink HFN of RB2, downlink HFN of RB2)).

NOTE: MSB_{20}() operation provides the HFN mapping from GERAN *Iu mode* to UTRAN. In GERAN *Iu mode* the length of HFN component of the COUNT-C of RB2 is longer than 20 bits.

1> initialise the variable TIMERS_AND_CONSTANTS to the default values and start to use those timer and constants values.

8.2.2.4 Transmission of a response message by the UE, normal case

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

If the new state is CELL_DCH or CELL_FACH, the response message shall be transmitted using the new configuration after the state transition, and the UE shall:

1> if the IE "Downlink counter synchronisation info" was included in the reconfiguration message; or

1> if the received reconfiguration message is a RADIO BEARER RECONFIGURATION and the IE "New U-RNTI" is included:

2> when RLC has confirmed the successful transmission of the response message:

3> if the variable PDCP_SN_INFO is empty:

4> configure the RLC entity for all AM and UM radio bearers and AM and UM signalling radio bearers except RB2 to "continue".

3> else:

4> configure the RLC entity for signalling radio bearers RB1, RB3 and RB4 to "continue";

4> configure the RLC entity for UM and AM radio bearers for which the IE "PDCP SN Info" is not included to "continue".

3> re-establish all AM and UM RLC entities with RB identities larger than 4 and set the first 20 bits of all the HFN component of the respective COUNT-C values to the START value included in the response message for the corresponding CN domain;

3> re-establish the RLC entities with RB identities 1, 3 and 4 and set the first 20 bits of all the HFN component of the respective COUNT-C values to the START value included in the response message for the CN domain stored in the variable LATEST_CONFIGURED_CN_DOMAIN;

3> set the remaining bits of the HFN component of COUNT-C values of all UM RLC entities to zero;

3> if the IE "PDCP context relocation info" is not present:

4> re-initialise the PDCP header compression entities of each radio bearer in the variable ESTABLISHED_RABS as specified in [36].

3> if the IE "PDCP context relocation info" is present:

4> perform the actions as specified in subclause 8.6.4.13.

1> if the variable PDCP_SN_INFO is empty:

2> if the received reconfiguration message contained the IE "Ciphering mode info":

3> when RLC has confirmed the successful transmission of the response message:

4> notify upper layers upon change of the security configuration;

4> perform the actions below.

2> if the received reconfiguration message did not contain the IE "Ciphering mode info":

3> when RLC has been requested to transmit the response message:

4> perform the actions below.

1> if the variable PDCP_SN_INFO is non-empty:

2> when RLC has confirmed the successful transmission of the response message:

3> for each radio bearer in the variable PDCP_SN_INFO:

4> if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":

5> configure the RLC entity for that radio bearer to "continue".

3> perform the actions below.

If the new state is CELL_PCH or URA_PCH, the response message shall be transmitted using the old configuration before the state transition, but the new C-RNTI shall be used if the IE "New C-RNTI" was included in the received reconfiguration message, and the UE shall:

1> when RLC has confirmed the successful transmission of the response message:

2> for each radio bearer in the variable PDCP_SN_INFO:

3> if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":

4> configure the RLC entity for that radio bearer to "continue".

2> enter the new state (CELL_PCH or URA_PCH, respectively);

2> perform the actions below.

The UE shall:

1> set the variable ORDERED_RECONFIGURATION to FALSE;

1> if the received reconfiguration message contained the IE "Ciphering mode info":

2> resume data transmission on any suspended radio bearer and signalling radio bearer mapped on RLC-AM or RLC-UM;

2> set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and

2> clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.

1> if the received reconfiguration message contained the IE "Integrity protection mode info":

2> allow the transmission of RRC messages on all signalling radio bearers with any RRC SN;

2> set "Uplink RRC Message sequence number" for signalling radio bearer RB0 in the variable INTEGRITY_PROTECTION_INFO to a value such that next RRC message to be sent on uplink RB0 will use the new integrity protection configuration;

2> set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and

2> clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO.

1> clear the variable PDCP_SN_INFO;

1> clear the variable START_VALUE_TO_TRANSMIT;

1> clear the variable SECURITY_MODIFICATION.

8.2.2.5 Reception of a response message by the UTRAN, normal case

When UTRAN has received

- the RADIO BEARER SETUP COMPLETE message; or
- the RADIO BEARER RECONFIGURATION COMPLETE message; or
- the RADIO BEARER RELEASE COMPLETE message; or
- the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message; or
- the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message.

UTRAN may:

1> delete the old configuration.

If the procedure caused the UE to leave the CELL_FACH state, UTRAN may:

1> delete the C-RNTI of the UE.

If the IE "UL Timing Advance" is included in TDD, UTRAN should:

1> evaluate the timing advance value that the UE has to use in the new cell after handover.

If the IE "START" or the IE "START list " is included, UTRAN should:

1> set the START value for each CN domain with the corresponding values as received in this response message;

1> consequently, then use the START values to initialise the hyper frame numbers, in the same way as specified for the UE in subclause 8.2.2.3, for any new radio bearers that are established.

If UTRAN has ordered a ciphering reconfiguration by including the IE "Ciphering mode info", UTRAN should:

1> for radio bearers using RLC-AM or RLC-UM:

2> use the old ciphering configuration for received RLC PDUs with RLC sequence number less than the RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent by the UE;

2> use the new ciphering configuration for received RLC PDUs with RLC sequence number greater than or equal to the RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent by the UE;

2> if an RLC reset or re-establishment occurs after this response message has been received by UTRAN before the activation time for the new ciphering configuration has been reached:

3> ignore the activation time; and

3> apply the new ciphering configuration immediately after the RLC reset or RLC re-establishment.

1> for radio bearers using RLC-TM:

2> begin incrementing the COUNT-C at the CFN only as indicated in:

3> the IE "Ciphering activation time for DPCH" in the IE "Ciphering mode info", if included in the message that triggered the radio bearer control procedure; or

3> the IE "COUNT-C activation time", if included in the response message for this procedure.

1> and the procedure ends on the UTRAN side.

8.2.2.6 Unsupported configuration in the UE

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED_CONFIGURATION to be set to TRUE, the UE shall:

1> transmit a failure response as specified in subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "configuration unsupported".

1> set the variable UNSUPPORTED_CONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The procedure ends.

8.2.2.7 Physical channel failure

If the received message caused the UE to be in CELL_DCH state and the UE according to subclause 8.5.4 failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> for HS-DSCH remove existing HS-PDSCH configurations;

1> otherwise revert to the configuration prior to the reception of the message (old configuration);

1> if the old configuration includes dedicated physical channels (CELL_DCH state) and the UE is unable to revert to the old configuration:

2> initiate a cell update procedure according to subclause 8.3.1, using the cause "radio link failure";

2> after the cell update procedure has completed successfully:

3> proceed as below.

1> if the old configuration does not include dedicated physical channels (CELL_FACH state):

2> select a suitable UTRA cell according to [4];

2> if the UE selects another cell than the cell the UE camped on upon reception of the reconfiguration message:

3> initiate a cell update procedure according to subclause 8.3.1, using the cause "Cell reselection";

3> after the cell update procedure has completed successfully:

4> proceed as below.

1> transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The procedure ends.

8.2.2.8 Cell re-selection

If the UE performs cell re-selection during the reconfiguration procedure, the UE shall:

1> initiate a cell update procedure, as specified in subclause 8.3.1;

1> continue with the reconfiguration procedure.

8.2.2.9 Transmission of a response message by the UE, failure case

The UE shall:

1> in case of reception of a RADIO BEARER SETUP message:

2> if the radio bearer establishment procedure affects several radio bearers:

3> (may) include the identities of the radio bearers for which the procedure would have been successful into the RADIO BEARER SETUP FAILURE message.

2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

1> in case of reception of a RADIO BEARER RECONFIGURATION message:

2> if the radio bearer reconfiguration procedure affects several radio bearers:

3> (may) include the identities of the radio bearers for which the procedure would have been successful into the RADIO BEARER RECONFIGURATION FAILURE message.

2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

1> in case of reception of a RADIO BEARER RECONFIGURATION message encapsulated in INTERSYSTEM HANDOVER TO UTRAN COMMAND message in GERAN *Iu mode*:

2> perform the actions as specified in [53].

1> in case of reception of a RADIO BEARER RELEASE message:

2> if the radio bearer release procedure affects several radio bearers:

3> (may) include the identities of the radio bearers for which the procedure would have been successful into the RADIO BEARER RELEASE FAILURE message.

2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:

2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:

2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

1> when the response message has been submitted to lower layers for transmission:

2> continue with any ongoing processes and procedures as if no reconfiguration attempt had occurred.

8.2.2.10 Reception of a response message by the UTRAN, failure case

When the UTRAN has received:

- the RADIO BEARER SETUP FAILURE message; or
- the RADIO BEARER RECONFIGURATION FAILURE message; or
- the RADIO BEARER RELEASE FAILURE message; or
- the TRANSPORT CHANNEL RECONFIGURATION FAILURE message; or
- the PHYSICAL CHANNEL RECONFIGURATION FAILURE message:

the UTRAN may restore the old and delete the new configuration. Upper layers should be notified of the failure.

The procedure ends on the UTRAN side.

8.2.2.11 Invalid configuration

If the variable INVALID_CONFIGURATION is set to TRUE the UE shall:

1> keep the configuration existing before the reception of the message;

1> transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

3> clear that entry.

2> set the IE "failure cause" to "invalid configuration".

1> set the variable INVALID_CONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The procedure ends.

8.2.2.12 Incompatible simultaneous reconfiguration

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL_ERROR_REJECT is set to FALSE, the UE shall:

1> not apply the configuration contained in the received reconfiguration message;

1> transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The procedure ends.

8.2.2.12a Incompatible simultaneous security reconfiguration

If the variable INCOMPATIBLE_SECURITY_RECONFIGURATION is set to TRUE due to the received reconfiguration message, the UE shall:

1> transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to the cause value "incompatible simultaneous reconfiguration".

1> set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The procedure ends.

8.2.2.12b Cell update procedure during security reconfiguration

If:

- a cell update procedure according to subclause 8.3.1 is initiated; and
- the received reconfiguration message causes either:
  - the IE "Reconfiguration" in the variable CIPHERING_STATUS to be set to TRUE; and/or
  - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to be set to TRUE:

the UE shall:

1> release all radio resources;

1> indicate the release of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers; and

1> clear any entry for the RRC CONNECTION RELEASE message in the tables "Accepted transactions" and "Rejected transactions" in the variable TRANSACTIONS;

1> clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

1> clear the variable ESTABLISHED_RABS;

1> if the received reconfiguration message contained the IE "Ciphering mode info":

2> set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and

2> clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;

2> clear the variable SECURITY_MODIFICATION.

1> if the received reconfiguration message contained the IE "Integrity protection mode info":

2> set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and

2> clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO.

1> enter idle mode;

1> perform the actions specified in subclause 8.5.2 when entering idle mode;

1> and the procedure ends.

NOTE: UTRAN should use RB Control messages to perform an SRNS relocation only in case of state transitions from CELL_DCH to CELL_DCH.

8.2.2.13 Invalid received message

If the received reconfiguration message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

1> transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to the cause value "protocol error";

2> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.

The procedure ends.

8.3.7 Inter-RAT handover from UTRAN

Figure 8.3.7-1: Inter-RAT handover from UTRAN, successful case

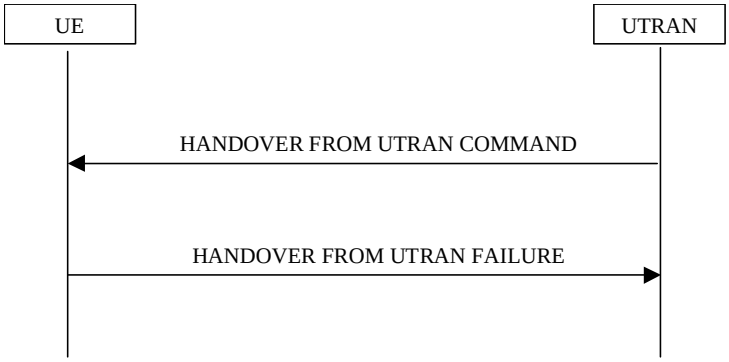

Figure 8.3.7-2: Inter-RAT handover from UTRAN, failure case

8.3.7.1 General

The purpose of the inter-RAT handover procedure is to, under the control of the network, transfer a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH state. This procedure may be used when no RABs are established or when the established RABs are only in the CS domain or when the established RABs are in both CS and PS domains.

8.3.7.2 Initiation

The procedure is initiated when UTRAN orders a UE in CELL_DCH state, to make a handover to a radio access technology other than UTRAN, e.g. GSM.

To initiate the procedure, UTRAN sends a HANDOVER FROM UTRAN COMMAND message.

8.3.7.3 Reception of a HANDOVER FROM UTRAN COMMAND message by the UE

The UE shall be able to receive a HANDOVER FROM UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target cell.

The UE shall:

1> establish the connection to the target radio access technology, by using the contents of the IE "Inter-RAT message". This IE contains a message specified in another standard, as indicated by the IE "System type", and carries information about the candidate/ target cell identifier(s) and radio parameters relevant for the target radio access technology. The correspondence between the value of the IE "System type", the standard to apply and the message contained within IE "Inter RAT message" is shown in the following:

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM	GSM TS 04.18, version 8.5.0 or later, or 3GPP TS 44.018	HANDOVER COMMAND
GERAN Iu	3GPP TS 44.118	RADIO BEARER RECONFIGURATION
cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

1> if the IE "System type" has the value "GSM" or "GERAN Iu":

2> if the IE "Frequency band" has the value "GSM /DCS 1800 band used":

3> set the BAND_INDICATOR [45] to "ARFCN indicates 1800 band".

2> if the IE "Frequency band" has the value " GSM /PCS 1900 band used":

3> set the BAND_INDICATOR [45] to "ARFCN indicates 1900 band".

1> apply the "Inter RAT Message" according to the "standard to apply" in the table above.

1> if the IE "RAB information List" is included in the HANDOVER FROM UTRAN COMMAND message:

2> if the IE "RAB information List" includes one IE "RAB Info" with the IE "CN domain Identity" set to "CS domain":

3> connect upper layer entities corresponding to the indicated CS domain RAB to the radio resources indicated in the inter-RAT message.

NOTE: In this version of the specification the maximum number of CS domain RABs which may be included in the IE "RAB information List" is limited to 1.

NOTE: In handover to GERAN *Iu mode*, the RAB information is included in the RADIO BEARER RECONFIGURATION message specified in [53].

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

8.3.7.4 Successful completion of the inter-RAT handover

Upon successfully completing the handover, UTRAN should:

1> release the radio connection; and

1> remove all context information for the concerned UE.

Upon successfully completing the handover, the UE shall:

1> if inter-RAT handover to GERAN *Iu mode* is performed:

2> perform the actions on reception of the RADIO BEARER RECONFIGURATION message as specified in [53].

1> if inter-RAT handover to GERAN *Iu mode* is performed and if there are any NAS messages for which the successful delivery of the INITIAL DIRECT TRANSFER message or UPLINK DIRECT TRANSFER message on signalling radio bearer RB3 or signalling radio bearer RB4 has not yet been confirmed by RLC; or

1> if inter-RAT handover to other RAT than GERAN *Iu mode* is performed and if there are any NAS messages with the IE "CN domain identity" set to "CS domain" for which the successful delivery of the INITIAL DIRECT TRANSFER message or UPLINK DIRECT TRANSFER message on signalling radio bearer RB3 or signalling radio bearer RB4 that have not yet been confirmed by RLC:

2> retransmit those NAS messages to the network on the newly established radio connection to the target radio access technology.

1> clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4.

NOTE: The release of the UMTS radio resources is initiated from the target RAT.

8.3.7.5 UE fails to complete requested handover

If the UE does not succeed in establishing the connection to the target radio access technology, it shall:

1> for HS-DSCH remove existing HS-PDSCH configurations;

1> otherwise revert back to the UTRA configuration;

1> establish the UTRA physical channel(s) used at the time for reception of HANDOVER FROM UTRAN COMMAND;

1> if the UE does not succeed to establish the UTRA physical channel(s):

2> perform a cell update procedure according to subclause 8.3.1 with cause "Radio link failure";

2> when the cell update procedure has completed successfully:

3> proceed as below.

1> transmit the HANDOVER FROM UTRAN FAILURE message setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "Inter-RAT handover failure" to "physical channel failure".

1> When the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layer for transmission:

2> the procedure ends.

8.3.7.6 Invalid HANDOVER FROM UTRAN COMMAND message

If the IE "Inter-RAT message" received within the HANDOVER FROM UTRAN COMMAND message does not include a valid inter RAT handover message in accordance with the protocol specifications for the target RAT, the UE shall perform procedure specific error handling as follows. The UE shall:

1> set the IE "failure cause" to the cause value "Inter-RAT protocol error";

1> include the IE "Inter-RAT message" in accordance with the specifications applicable to the other RAT;

1> transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;

1> when the transmission of the HANDOVER FROM UTRAN FAILURE message has been confirmed by RLC:

2> continue with any ongoing processes and procedures as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;

2> and the procedure ends.

If the HANDOVER FROM UTRAN COMMAND message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

1> set the IE "RRC transaction identifier" in the HANDOVER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Rejected transactions" in the variable TRANSACTIONS; and

1> clear that entry;

1> set the IE "failure cause" to the cause value "protocol error";

1> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

1> transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;

1> when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:

2> continue with any ongoing processes and procedures as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;

2> and the procedure ends.

8.3.7.7 Reception of an HANDOVER FROM UTRAN FAILURE message by UTRAN

Upon receiving an HANDOVER FROM UTRAN FAILURE message, UTRAN may initiate the release the resources in the target radio access technology.

8.3.7.8 Unsupported configuration in HANDOVER FROM UTRAN COMMAND message

If:

- the UTRAN instructs the UE to perform a non-supported handover scenario; or
- the UTRAN instructs the UE to use a non-supported configuration; or
- inter-RAT handover to other RAT than GERAN *Iu mode* is performed and the IE "RAB information List" is included in the HANDOVER FROM UTRAN COMMAND message and this IE does not include any IE "RAB Info" with the IE "CN domain Identity" set to "CS domain":

the UE shall:

1> transmit a HANDOVER FROM UTRAN FAILURE message, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "Inter-RAT handover failure" to "configuration unacceptable";

2> when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:

3> resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;

3> and the procedure ends.

8.3.7.8a Reception of HANDOVER FROM UTRAN COMMAND message by UE in CELL_FACH

If the UE receives HANDOVER FROM UTRAN COMMAND while in CELL_FACH, the UE shall:

1> transmit a HANDOVER FROM UTRAN FAILURE message, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "Inter-RAT handover failure" to "protocol error", include IE "Protocol error information"; and

2> set the value of IE "Protocol error cause" to "Message not compatible with receiver state";

2> when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:

3> resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;

3> and the procedure ends.

8.4.0 Measurement related definitions

UTRAN may control a measurement in the UE either by broadcast of SYSTEM INFORMATION and/or by transmitting a MEASUREMENT CONTROL message.

In the context of the measurement procedures, the term GSM refers to both GERAN A/Gb mode and GERAN Iu mode.

The following information is used to control the UE measurements and the measurement results reporting:

1. **Measurement identity**: A reference number that should be used by the UTRAN when setting up, modifying or releasing the measurement and by the UE in the measurement report.
2. **Measurement command**: One out of three different measurement commands.
   - Setup: Setup a new measurement.
   - Modify: Modify a previously defined measurement, e.g. to change the reporting criteria.
   - Release: Stop a measurement and clear all information in the UE that are related to that measurement.
3. **Measurement type**: One of the types listed below describing what the UE shall measure.

Presence or absence of the following control information depends on the measurement type

4. **Measurement objects:** The objects on which the UE shall measure measurement quantities, and corresponding object information.
5. **Measurement quantity:** The quantity the UE shall measure on the measurement object. This also includes the filtering of the measurements.
6. **Reporting quantities:** The quantities the UE shall include in the report in addition to the quantities that are mandatory to report for the specific event.
7. **Measurement reporting criteria**: The triggering of the measurement report, e.g. periodical or event-triggered reporting.
8. **Measurement Validity**: Defines in which UE states the measurement is valid.
9. **Measurement reporting mode**: This specifies whether the UE shall transmit the measurement report using AM or UM RLC.
10. **Additional measurement identities**: A list of references to other measurements. When this measurement triggers a measurement report, the UE shall also include the reporting quantities for the measurements referenced by the additional measurement identities.

All these measurement parameters depend on the measurement type and are described in more detail in clause 14.

The different types of measurements are:

- **Intra-frequency measurements**: measurements on downlink physical channels at the same frequency as the active set. A measurement object corresponds to one cell. Detailed description is found in subclause 14.1.
- **Inter-frequency measurements**: measurements on downlink physical channels at frequencies that differ from the frequency of the active set and on downlink physical channels in the active set. A measurement object corresponds to one cell. Detailed description is found in subclause 14.2.
- **Inter-RAT measurements**: measurements on downlink physical channels belonging to another radio access technology than UTRAN, e.g. GSM. A measurement object corresponds to one cell. Detailed description is found in subclause 14.3.
- **Traffic volume measurements**: measurements on uplink traffic volume. A measurement object corresponds to one cell. Detailed description is found in subclause 14.4.
- **Quality measurements**: Measurements of downlink quality parameters, e.g. downlink transport block error rate. A measurement object corresponds to one transport channel in case of BLER. A measurement object corresponds to one timeslot in case of SIR (TDD only). Detailed description is found in subclause 14.5.

- **UE-internal measurements**: Measurements of UE transmission power and UE received signal level. Detailed description is found in subclause 14.6.

- **UE positioning measurements:** Measurements of UE position. Detailed description is found in subclause 14.7.

The UE shall support a number of measurements running in parallel as specified in [19] and [20]. The UE shall also support that each measurement is controlled and reported independently of every other measurement.

Cells that the UE is monitoring are grouped in the UE into three mutually exclusive categories:

1. Cells, which belong to the **active set.** User information is sent from all these cells. In FDD, the cells in the active set are involved in soft handover. In TDD the active set always comprises one cell only. The UE shall only consider active set cells included in the variable CELL_INFO_LIST for measurement; i.e. active set cells not included in the CELL_INFO_LIST shall not be considered in any event evaluation and measurement reporting.

2. Cells, which are not included in the active set, but are included in the CELL_INFO_LIST belong to the **monitored set.**

3. Cells detected by the UE, which are neither in the CELL_INFO_LIST nor in the active set belong to the **detected set.** Reporting of measurements of the detected set is only applicable to intra-frequency measurements made by UEs in CELL_DCH state.

If the IE "Cells for measurement" has been included in a MEASUREMENT CONTROL message, only monitored set cells explicitly indicated for a given intra-frequency (resp. inter-frequency, interRAT) measurement by the IE "Cells for measurement" shall be considered for measurement. If the IE "Cells for measurement" has not been included in a MEASUREMENT CONTROL message, all of the intra-frequency (resp. inter-frequency, inter RAT) cells stored in the variable CELL_INFO_LIST shall be considered for measurement. The IE "Cells for measurement" is not applicable to active set cells or virtual active set cells e.g. when the triggering condition refers to active set cells, the UE shall consider all active set cells in the CELL_INFO_LIST for measurement irrespective if these cells are explicitly indicated by the IE "Cells for measurement".

8.5.22 Actions when entering another RAT from connected mode

NOTE: This section does not apply when entering GERAN Iu mode from UTRAN connected mode.

When entering another RAT from connected mode (due to Inter-RAT handover from UTRAN, Inter-RAT cell change order from UTRAN or Inter-RAT cell reselection from UTRAN), after successful completion of the procedure causing the transition to the other RAT, the UE shall:

1> if the USIM is present, for each CN domain:

2> if a new security key set was received for this CN domain but was not used either for integrity protection or ciphering during this RRC connection:

3> set the START value for this domain to zero and;

3> store this START value for this domain in the USIM;

2> else:

3> store the current START value for every CN domain in the USIM [50].

1> if the SIM is present, for each CN domain:

2> if a new security key was received for this CN domain but was not used either for integrity protection or ciphering during this RRC connection:

3> set the START value for this domain to zero and;

3> store this START value for this domain in the USIM.

2> else:

3> store the current START value for this CN domain in the UE.

8.6.3.5.2 Integrity Protection Re-configuration for SRNS Relocation and handover from GERAN Iu mode

The UE shall:

1> if IE "Integrity protection mode command" has the value "start" and the IE "Status" in the variable INTEGRITY_PROTECTION_INFO has the value "Started" and this IE was not included SECURITY MODE COMMAND:

NOTE: This case is used in SRNS relocation and in handover from GERAN *Iu mode*.

2> perform integrity protection on the received message, applying the new integrity protection configuration, as described in subclause 8.5.10.1 by:

3> using the algorithm (UIA [40]) indicated by the IE "Integrity protection algorithm" contained in the IE "Integrity protection mode info";

3> using the IE "Integrity protection initialisation number", contained in the IE "Integrity protection mode info" as the value of FRESH [40].

2> let RBm be the signalling radio bearer where the reconfiguration message was received and let RBn be the signalling radio bearer where the response message is transmitted;

2> prohibit transmission of RRC messages on all signalling radio bearers in the IE "ESTABLISHED_RABS" except on RB0 and the radio bearer where the response message is transmitted;

2> for the downlink, for each signalling radio bearer, if for the signalling radio bearer, a security configuration triggered by a previous SECURITY MODE COMMAND has not yet been applied, due to the activation time for the signalling radio bearer not having been reached:

3> set "Down link RRC Message sequence number" for this signalling radio bearer in the variable INTEGRITY_PROTECTION_INFO to (activation time -1), where the activation time is the corresponding activation time for this signalling radio bearer;

3> if the previous SECURITY MODE COMMAND was received due to new keys being received:

4> consider the new integrity protection configuration to include the received new keys.

3> else if the previous SECURITY MODE COMMAND caused a change in LATEST_CONFIGURED_CN_DOMAIN:

4> consider the new Integrity Protection configuration to include the keys associated with the LATEST_CONFIGURED_CN_DOMAIN associated with the previously received SECURITY MODE COMMAND.

2> start applying the new integrity protection configuration in the downlink for each signalling radio bearer in the IE "ESTABLISHED_RABS" except RBm at the next received RRC message for the corresponding signalling radio bearer;

2> start applying the new integrity protection configuration in the downlink for signalling radio bearer RBm from and including the received configuration message;

2> start applying the new integrity protection configuration in the uplink for signalling radio bearer RBn from and including the transmitted response message;

2> start applying the new integrity protection configuration in the uplink for signalling radio bearers other than RBn from the first message onwards.

10.2.15 HANDOVER FROM UTRAN COMMAND

This message is used for handover from UMTS to another system e.g. GSM. One or several messages from the other system can be included in the Inter-RAT message information element in this message. These messages are structured and coded according to that systems specification.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE information elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
RB information elements					
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over. In this version, the maximum size of the list of 1 shall be applied for all system types. In handover to GERAN *Iu mode* the RAB information is included in the GERAN Iu message below.	
>RAB info	MP		RAB info 10.3.4.8		
Other information elements					
CHOICE *System type*	MP			This IE indicates which specification to apply, to decode the transported messages	
>GSM					
>>Frequency band	MP		Enumerated (GSM/DCS 1800 band used), GSM/PCS 1900 band used)		
>>GSM message					
>>>Single GSM message	MP		Bit string (no explicit size constraint)	Formatted and coded according to GSM specifications The first/leftmost/most significant bit of the bit string contains bit 8 of the first octet of the GSM message.	
>>>GSM message List	MP	1.to.<maxInterSysMessa	Bit string (1..512)	Formatted and coded according to GSM specifications. The	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
		ges>		first/leftmost/most significant bit of the bit string contains bit 8 of the first octet of the GSM message.	
>GERAN Iu					REL-5
>>Frequency band	MP		Enumerated (GSM/DCS 1800 band used), GSM/PCS 1900 band used)		REL-5
>>GERAN Iu message					REL-5
>>>Single GERAN Iu message	MP		Bit string (no explicit size constraint)	Formatted and coded according to [53]. The first/leftmost/most significant bit of the bit string contains bit 8 of the first octet of the message.	REL-5
>>>GERAN Iu message List	MP	1 to <maxInterSysMessages>	Bit string (1..32768)	Formatted and coded according to [53]. The first/leftmost/most significant bit of the bit string contains bit 8 of the first octet of the message.	REL-5
>cdma2000					
>>cdma2000MessageList	MP	1.to.<maxInterSysMessages>			
>>>MSG_TYPE(s)	MP		Bit string (8)	Formatted and coded according to cdma2000 specifications. The MSG_TYPE bits are numbered b0 to b7. The first/leftmost/most significant bit of the bit string contains bit 7 of the MSG_TYPE.	
>>>cdma2000Messagepayload(s)	MP		Bit string (1..512)	Formatted and coded according to cdma2000 specifications. The first/leftmost/most significant bit of the bit string contains the bit 7 of the first octet of the cdma2000 message.	

10.2.16 HANDOVER FROM UTRAN FAILURE

This message is sent on the RRC connection used before the Inter-RAT Handover was executed. The message indicates that the UE has failed to seize the new channel in the other system.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE information elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Other information elements					
Inter-RAT handover failure	OP		Inter-RAT handover failure 10.3.8.6		
CHOICE *System type*	OP			This IE indicates which specification to apply to decode the transported messages	
>GSM					
>GSM message List	MP	1.to.<maxInterSysMessages>	Bit string (1..512)	Formatted and coded according to GSM specifications. The first/leftmost/most significant bit of the bit string contains bit 8 of the first octet of the GSM message.	
>GERAN Iu					REL-5
>>GERAN Iu message List	MP	1 to <maxInterSysMessages>	Bit string (1..32768)	Formatted and coded according to [53]. The first/leftmost/most significant bit of the bit string contains bit 8 of the first octet of the message.	REL-5
>cdma2000					
>>cdma2000MessageList	MP	1.to.<maxInterSysMessages>			
>>>MSG_TYPE(s)	MP		Bit string (8)	Formatted and coded according to cdma2000 specifications. The MSG_TYPE bits are numbered b0 to b7. The first/leftmost/most significant bit of the bit string contains bit 7 of the	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
				MSG_TYPE.	
>>>cdma2000Messagepayload(s)	MP		Bit string (1..512)	Formatted and coded according to cdma2000 specifications. The first/leftmost/most significant bit of the bit string contains bit 7 of the first octet of the cdma2000 message.	

10.2.27 RADIO BEARER RECONFIGURATION

This message is sent from UTRAN to reconfigure parameters related to a change of QoS. This procedure can also change the multiplexing of MAC, reconfigure transport channels and physical channels. This message is also used to perform a handover from GERAN *Iu mode* to UTRAN.

RLC-SAP: AM or UM or sent through GERAN *Iu mode*

Logical channel: DCCH or sent through GERAN *Iu mode*

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation or a handover from GERAN *Iu mode*	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing either an SRNS relocation or a handover from GERAN *Iu mode* and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a		
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
RRC State Indicator	MP		RRC State Indicator 10.3.3.10		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN information elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
CHOICE *specification mode*	MP				REL-5
>Complete specification					
RB information elements					
>>RAB information to reconfigure list	OP	1 to < maxRABsetup >			
>>>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11		
>>RB information to reconfigure list	MP	1to <maxRB>		Although this IE is not always required, need is MP to align with ASN.1	
	OP				REL-4
>>>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18		
>>RB information to be affected list	OP	1 to <maxRB>			
>>>RB information to be affected	MP		RB information to be affected 10.3.4.17		
>>RB with PDCP context relocation info list	OP	1 to <maxRBallRABs>		This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
>>>RB identity	MP		RB identity 10.3.4.16		REL-5
>>>PDCP context relocation info	MP		PDCP context relocation info 10.3.4.1a		REL-5
TrCH Information Elements					
Uplink transport channels					
>>UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>>Deleted TrCH information list	OP	1 to <maxTrCH>			
>>>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
>>Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2		
>>CHOICE *mode*	OP				
>>>FDD					
>>>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>>>TDD				(no data)	
Downlink transport channels					
>>DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
>>Deleted TrCH information list	OP	1 to <maxTrCH>			
>>>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
>>Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
>Preconfiguration					REL-5
>>CHOICE *Preconfiguration mode*	MP				
>>>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5		
>>>Default configuration					
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used	
>>>>Default configuration identity	MP		Default configuration		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			identity 10.3.4.0		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
CHOICE *mode*	MP				
>FDD					
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30		
>TDD				(no data)	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	MP	1 to <maxRL>		Although this IE is not always required, need is MP to align with ASN.1	
	OP				REL-4
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

10.3.8.7 Inter-RAT UE radio access capability

This Information Element contains the inter-RAT UE radio access capability that is structured and coded according to the specification used for the corresponding system type.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE *system*	MP				
>GSM					
>>Mobile Station Classmark 2	MP		Octet string (5)	This IE is formatted as 'TLV' and is coded in the same way as the *Mobile Station Classmark 2* information element in [5]. The first octet is the *Mobile station classmark 2 IEI* and its value shall be set to 33H. The second octet is the *Length of mobile station classmark 2* and its value shall be set to 3. The octet 3 contains the first octet of the value part of the *Mobile Station Classmark 2* information element, the octet 4 contains the second octet of the value part of the *Mobile Station Classmark 2* information element and so on. For each of these octets, the first/ leftmost/ most significant bit of the octet contains b8 of the corresponding octet of the *Mobile Station Classmark 2.* In this version of the protocol the first two octets of the Mobile Station Classmark 2 IE containing the *Mobile station classmark 2 IEI* and the *Length of mobile station classmark 2 contents* should be ignored by the receiver.	
>>Mobile Station Classmark 3	MP		Octet string (1..32)	This IE is formatted as 'V' and is coded in the same way as the value part in the *Mobile station classmark 3* information element in [5]. The first octet contains octet 1 of the value part of *Mobile station classmark 3*, the second octet contains octet 2 of the value part of *Mobile station classmark 3* and so on. See NOTE 1.	
>GERAN Iu					REL-5
>>MS GERAN Iu mode Radio Access Capability	MP		Bit string (1..170)	Formatted and coded according to [53]. The first/leftmost/most significant bit of the bit string contains bit 8 of the first octet of the IE.	REL-5
>cdma2000					
>>cdma2000Message	MP	1.to.<maxInterSysMessages>			
>>>MSG_TYPE(s)	MP		Bit string (8)	Formatted and coded according to cdma2000 specifications. The first/leftmost/most significant bit of the bit string contains bit 7 of the MSG_TYPE.	
>>>cdma2000Messagepayload(s)	MP		Bit string (1..512)	Formatted and coded according to cdma2000 specifications. The first/leftmost/most significant bit of	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
				the bit string contains bit 7 of the first octet of the cdma2000 message.	

NOTE 1: The value part is specified by means of CSN.1, which encoding results in a bit string, to which final padding may be appended upto the next octet boundary [5]. The first/ leftmost bit of the CSN.1 bit string is placed in the first/ leftmost/ most significant bit of the first octet. This continues until the last bit of the CSN.1 bit string, which is placed in the last/ rightmost/ least significant bit of the last octet.

11.1 General message structure

11.1 General message structure

```
Class-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    ActiveSetUpdate,
    ActiveSetUpdateComplete,
    ActiveSetUpdateFailure,
    AssistanceDataDelivery,
    CellChangeOrderFromUTRAN,
    CellChangeOrderFromUTRANFailure,
    CellUpdate,
    CellUpdateConfirm-CCCH,
    CellUpdateConfirm,
    CounterCheck,
    CounterCheckResponse,
    DownlinkDirectTransfer,
    HandoverToUTRANComplete,
    InitialDirectTransfer,
    HandoverFromUTRANCommand-GERANIu,
    HandoverFromUTRANCommand-GSM,
    HandoverFromUTRANCommand-CDMA2000,
    HandoverFromUTRANFailure,
    MeasurementControl,
    MeasurementControlFailure,
    MeasurementReport,
    PagingType1,
    PagingType2,
    PhysicalChannelReconfiguration,
    PhysicalChannelReconfigurationComplete,
    PhysicalChannelReconfigurationFailure,
    PhysicalSharedChannelAllocation,
    PUSCHCapacityRequest,
    RadioBearerReconfiguration,
    RadioBearerReconfigurationComplete,
    RadioBearerReconfigurationFailure,
    RadioBearerRelease,
    RadioBearerReleaseComplete,
    RadioBearerReleaseFailure,
    RadioBearerSetup,
    RadioBearerSetupComplete,
    RadioBearerSetupFailure,
    RRCConnectionReject,
    RRCConnectionRelease,
    RRCConnectionRelease-CCCH,
    RRCConnectionReleaseComplete,
    RRCConnectionRequest,
    RRCConnectionSetup,
    RRCConnectionSetupComplete,
    RRCStatus,
    SecurityModeCommand,
    SecurityModeComplete,
    SecurityModeFailure,
    SignallingConnectionRelease,
    SignallingConnectionReleaseIndication,
    SystemInformation-BCH,
    SystemInformation-FACH,
    SystemInformationChangeIndication,
    TransportChannelReconfiguration,
    TransportChannelReconfigurationComplete,
    TransportChannelReconfigurationFailure,
    TransportFormatCombinationControl,
    TransportFormatCombinationControlFailure,
    UECapabilityEnquiry,
    UECapabilityInformation,
    UECapabilityInformationConfirm,
    UplinkDirectTransfer,
    UplinkPhysicalChannelControl,
    URAUpdate,
    URAUpdateConfirm,
```

```
    URAUpdateConfirm-CCCH,
    UTRANMobilityInformation,
    UTRANMobilityInformationConfirm,
    UTRANMobilityInformationFailure
FROM PDU-definitions

-- User Equipment IEs :
    IntegrityCheckInfo
FROM InformationElements;

--********************************************************
--
-- Downlink DCCH messages
--
--********************************************************

DL-DCCH-Message ::= SEQUENCE {
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 DL-DCCH-MessageType
}

DL-DCCH-MessageType ::= CHOICE {
    activeSetUpdate                     ActiveSetUpdate,
    assistanceDataDelivery              AssistanceDataDelivery,
    cellChangeOrderFromUTRAN            CellChangeOrderFromUTRAN,
    cellUpdateConfirm                   CellUpdateConfirm,
    counterCheck                        CounterCheck,
    downlinkDirectTransfer              DownlinkDirectTransfer,
    handoverFromUTRANCommand-GSM        HandoverFromUTRANCommand-GSM,
    handoverFromUTRANCommand-CDMA2000   HandoverFromUTRANCommand-CDMA2000,
    measurementControl                  MeasurementControl,
    pagingType2                         PagingType2,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration,
    physicalSharedChannelAllocation     PhysicalSharedChannelAllocation,
    radioBearerReconfiguration          RadioBearerReconfiguration,
    radioBearerRelease                  RadioBearerRelease,
    radioBearerSetup                    RadioBearerSetup,
    rrcConnectionRelease                RRCConnectionRelease,
    securityModeCommand                 SecurityModeCommand,
    signallingConnectionRelease         SignallingConnectionRelease,
    transportChannelReconfiguration     TransportChannelReconfiguration,
    transportFormatCombinationControl   TransportFormatCombinationControl,
    ueCapabilityEnquiry                 UECapabilityEnquiry,
    ueCapabilityInformationConfirm      UECapabilityInformationConfirm,
    uplinkPhysicalChannelControl        UplinkPhysicalChannelControl,
    uraUpdateConfirm                    URAUpdateConfirm,
    utranMobilityInformation            UTRANMobilityInformation,
    handoverFromUTRANCommand-GERANIu    HandoverFromUTRANCommand-GERANIu,
    spare7                              NULL,
    spare6                              NULL,
    spare5                              NULL,
    spare4                              NULL,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

--********************************************************
--
-- Uplink DCCH messages
--
--********************************************************

UL-DCCH-Message ::= SEQUENCE {
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 UL-DCCH-MessageType
}

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete             ActiveSetUpdateComplete,
    activeSetUpdateFailure              ActiveSetUpdateFailure,
    cellChangeOrderFromUTRANFailure     CellChangeOrderFromUTRANFailure,
    counterCheckResponse                CounterCheckResponse,
    handoverToUTRANComplete             HandoverToUTRANComplete,
    initialDirectTransfer               InitialDirectTransfer,
    handoverFromUTRANFailure            HandoverFromUTRANFailure,
    measurementControlFailure           MeasurementControlFailure,
    measurementReport                   MeasurementReport,
```

```
    physicalChannelReconfigurationComplete
                                    PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                    PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete  RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure   RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete          RadioBearerReleaseComplete,
    radioBearerReleaseFailure           RadioBearerReleaseFailure,
    radioBearerSetupComplete            RadioBearerSetupComplete,
    radioBearerSetupFailure             RadioBearerSetupFailure,
    rrcConnectionReleaseComplete        RRCConnectionReleaseComplete,
    rrcConnectionSetupComplete          RRCConnectionSetupComplete,
    rrcStatus                           RRCStatus,
    securityModeComplete                SecurityModeComplete,
    securityModeFailure                 SecurityModeFailure,
    signallingConnectionReleaseIndication
                                    SignallingConnectionReleaseIndication,
    transportChannelReconfigurationComplete
                                    TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                    TransportChannelReconfigurationFailure,
    transportFormatCombinationControlFailure
                                    TransportFormatCombinationControlFailure,
    ueCapabilityInformation             UECapabilityInformation,
    uplinkDirectTransfer                UplinkDirectTransfer,
    utranMobilityInformationConfirm     UTRANMobilityInformationConfirm,
    utranMobilityInformationFailure     UTRANMobilityInformationFailure,
    spare2                              NULL,
    spare1                              NULL
}

--************************************************************
--
-- Downlink CCCH messages
--
--************************************************************

DL-CCCH-Message ::= SEQUENCE {
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 DL-CCCH-MessageType
}

DL-CCCH-MessageType ::= CHOICE {
    cellUpdateConfirm                   CellUpdateConfirm-CCCH,
    rrcConnectionReject                 RRCConnectionReject,
    rrcConnectionRelease                RRCConnectionRelease-CCCH,
    rrcConnectionSetup                  RRCConnectionSetup,
    uraUpdateConfirm                    URAUpdateConfirm-CCCH,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

--************************************************************
--
-- Uplink CCCH messages
--
--************************************************************

UL-CCCH-Message ::= SEQUENCE {
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 UL-CCCH-MessageType
}

UL-CCCH-MessageType ::= CHOICE {
    cellUpdate                          CellUpdate,
    rrcConnectionRequest                RRCConnectionRequest,
    uraUpdate                           URAUpdate,
    spare1                              NULL
}

--************************************************************
--
-- PCCH messages
--
--************************************************************

PCCH-Message ::= SEQUENCE {
```

```
    message             PCCH-MessageType
}

PCCH-MessageType ::= CHOICE {
    pagingType1                         PagingType1,
    spare                               NULL
}

--************************************************************
--
-- Downlink SHCCH messages
--
--************************************************************

DL-SHCCH-Message ::= SEQUENCE {
    message                 DL-SHCCH-MessageType
}

DL-SHCCH-MessageType ::= CHOICE {
    physicalSharedChannelAllocation     PhysicalSharedChannelAllocation,
    extension                           NULL
}

--************************************************************
--
-- Uplink SHCCH messages
--
--************************************************************

UL-SHCCH-Message ::= SEQUENCE {
    message                 UL-SHCCH-MessageType
}

UL-SHCCH-MessageType ::= CHOICE {
    puschCapacityRequest                PUSCHCapacityRequest,
    spare                               NULL
}


--************************************************************
--
-- BCCH messages sent on FACH
--
--************************************************************

BCCH-FACH-Message ::= SEQUENCE {
    message             BCCH-FACH-MessageType
}

BCCH-FACH-MessageType ::= CHOICE {
    systemInformation                   SystemInformation-FACH,
    systemInformationChangeIndication   SystemInformationChangeIndication,
    spare2                              NULL,
    spare1                              NULL
}

--************************************************************
--
-- BCCH messages sent on BCH
--
--************************************************************

BCCH-BCH-Message ::= SEQUENCE {
    message             SystemInformation-BCH
}

END
```

11.2 PDU definitions

```
--************************************************************
--
-- TABULAR: The message type and integrity check info are not
-- visible in this module as they are defined in the class module.
-- Also, all FDD/TDD specific choices have the FDD option first
-- and TDD second, just for consistency.
```

```
--
--**************************************************************

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

--**************************************************************
--
-- IE parameter types from other modules
--
--**************************************************************

IMPORTS

-- Core Network IEs :
    CN-DomainIdentity,
    CN-InformationInfo,
    CN-InformationInfoFull,
    NAS-Message,
    PagingRecordTypeID,
-- UTRAN Mobility IEs :
    CellIdentity,
    CellIdentity-PerRL-List,
    URA-Identity,
-- User Equipment IEs :
    AccessStratumReleaseIndicator,
    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CapabilityUpdateRequirement-r4,
    CapabilityUpdateRequirement-r4-ext,
    CellUpdateCause,
    CipheringAlgorithm,
    CipheringModeInfo,
    DSCH-RNTI,
    EstablishmentCause,
    FailureCauseWithProtErr,
    FailureCauseWithProtErrTrId,
    GroupReleaseInformation,
    H-RNTI,
    UESpecificBehaviourInformation1idle,
    UESpecificBehaviourInformation1interRAT,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    N-308,
    PagingCause,
    PagingRecordList,
    PagingRecordList-r5,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithMoreInfo,
    Rb-timer-indicator,
    RedirectionInfo,
    RejectionCause,
    ReleaseCause,
    RF-CapabilityComp,
    RRC-StateIndicator,
    RRC-TransactionIdentifier,
    SecurityCapability,
    START-Value,
    STARTList,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    UE-RadioAccessCapability-v370ext,
    UE-RadioAccessCapability-v380ext,
    UE-RadioAccessCapability-v3a0ext,
    UE-RadioAccessCapability-v4xyext,
    UE-RadioAccessCapability-v5xyext,
    UE-RadioAccessCapabilityComp,
    DL-PhysChCapabilityFDD-v380ext,
    UE-ConnTimersAndConstants,
    UE-ConnTimersAndConstants-v3a0ext,
    UE-ConnTimersAndConstants-r5,
    UE-SecurityInformation,
    URA-UpdateCause,
    UTRAN-DRX-CycleLengthCoefficient,
```

```
    WaitTime,
-- Radio Bearer IEs :
    DefaultConfigIdentity,
    DefaultConfigIdentity-r4,
    DefaultConfigMode,
    DL-CounterSynchronisationInfo,
    DL-CounterSynchronisationInfo-r5,
    PredefinedConfigIdentity,
    PredefinedConfigStatusList,
    PredefinedConfigStatusListComp,
    PredefinedConfigSetWithDifferentValueTag,
    RAB-Info,
    RAB-Info-Post,
    RAB-InformationList,
    RAB-InformationReconfigList,
    RAB-InformationSetupList,
    RAB-InformationSetupList-r4,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,
    RB-COUNT-C-MSB-InformationList,
    RB-IdentityList,
    RB-InformationAffectedList,
    RB-InformationAffectedList-r5,
    RB-InformationReconfigList,
    RB-InformationReconfigList-r4,
    RB-InformationReconfigList-r5,
    RB-InformationReleaseList,
    RB-PDCPContextRelocationList,
    SRB-InformationSetupList,
    SRB-InformationSetupList2,
    UL-CounterSynchronisationInfo,
-- Transport Channel IEs:
    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DL-AddReconfTransChInfoList-r5,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
    DL-DeletedTransChInfoList,
    DL-DeletedTransChInfoList-r5,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
    UL-DeletedTransChInfoList,
-- Physical Channel IEs :
    Alpha,
    CCTrCH-PowerControlInfo,
    CCTrCH-PowerControlInfo-r4,
    ConstantValue,
    ConstantValueTdd,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformation-r4,
    DL-CommonInformationPost,
    DL-HSPDSCH-Information,
    DL-InformationPerRL,
    DL-InformationPerRL-List,
    DL-InformationPerRL-List-r4,
    DL-InformationPerRL-List-r5,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-InformationPerRL-PostTDD-LCR-r4,
    DL-PDSCH-Information,
    DPC-Mode,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    HS-SICH-Power-Control-Info-TDD384,
    MaxAllowedUL-TX-Power,
    OpenLoopPowerControl-IPDL-TDD-r4,
    PDSCH-CapacityAllocationInfo,
    PDSCH-CapacityAllocationInfo-r4,
    PDSCH-Identity,
```

```
    PrimaryCPICH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-CapacityAllocationInfo-r4,
    PUSCH-Identity,
    PUSCH-SysInfoList-HCR-r5,
    PDSCH-SysInfoList-HCR-r5,
    RL-AdditionInformationList,
    RL-RemovalInformationList,
    SpecialBurstScheduling,
    SSDT-Information,
    TFC-ControlDuration,
    SSDT-UL-r4,
    TimeslotList,
    TimeslotList-r4,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-ChannelRequirement-r4,
    UL-ChannelRequirement-r5,
    UL-ChannelRequirementWithCPCH-SetID,
    UL-ChannelRequirementWithCPCH-SetID-r4,
    UL-ChannelRequirementWithCPCH-SetID-r5,
    UL-DPCH-Info,
    UL-DPCH-Info-r4,
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-DPCH-InfoPostTDD-LCR-r4,
    UL-SynchronisationParameters-r4,
    UL-TimingAdvance,
    UL-TimingAdvanceControl,
    UL-TimingAdvanceControl-r4,
-- Measurement IEs :
    AdditionalMeasurementID-List,
    DeltaRSCP,
    Frequency-Band,
    EventResults,
    Inter-FreqEventCriteriaList-v5xyext,
    Intra-FreqEventCriteriaList-v5xyext,
    IntraFreqReportingCriteria-1b-r5ext,
    IntraFreqEvent-1d-r5ext,
    InterFreqEventResults-LCR-r4-ext,
    InterRAT-TargetCellDescription,
    MeasuredResults,
    MeasuredResults-v390ext,
    MeasuredResults-v5xyext,
    MeasuredResultsList,
    MeasuredResultsList-LCR-r4-ext,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementCommand-r4,
    MeasurementIdentity,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    SFN-Offset-Validity,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList,
    UE-Positioning-GPS-AssistanceData,
    UE-Positioning-Measurement-v390ext,
    UE-Positioning-OTDOA-AssistanceData,
    UE-Positioning-OTDOA-AssistanceData-r4ext,
    UE-Positioning-OTDOA-AssistanceData-UEB,
    UE-Positioning-IPDL-Parameters-TDD-r4-ext,
-- Other IEs :
    BCCH-ModificationInfo,
    CDMA2000-MessageList,
    GERANIu-MessageList,
    GERAN-SystemInformation,
    GSM-MessageList,
    InterRAT-ChangeFailureCause,
    InterRAT-HO-FailureCause,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapabilityList-r5,
    InterRAT-UE-SecurityCapList,
    IntraDomainNasNodeSelector,
    ProtocolErrorMoreInformation,
    Rplmn-Information,
    Rplmn-Information-r4,
    SegCount,
    SegmentIndex,
```

```
    SFN-Prime,
    SIB-Data-fixed,
    SIB-Data-variable,
    SIB-Type
FROM InformationElements

    maxSIBperMsg,
    maxURNTI-Group
FROM Constant-definitions;

-- **************************************************
--
-- HANDOVER FROM UTRAN COMMAND
--
-- **************************************************

HandoverFromUTRANCommand-GSM ::= CHOICE {
    r3                              SEQUENCE {
        handoverFromUTRANCommand-GSM-r3
                                        HandoverFromUTRANCommand-GSM-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            handoverFromUTRANCommand-GSM-r3-add-ext     BIT STRING  OPTIONAL,
            -- UTRAN should not include the IE nonCriticalExtensions when it sets
            -- the IE gsm-message included in handoverFromUTRANCommand-GSM-r3 to single-GSM-Message
            -- The UE behaviour upon receiving a message including this combination of IE values is
            -- not specified
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

HandoverFromUTRANCommand-GSM-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        activationTime                  ActivationTime                      OPTIONAL,
    -- Radio bearer IEs
        toHandover-Info                 RAB-Info                            OPTIONAL,
    -- Measurement IEs
        frequency-band                  Frequency-Band,
    -- Other IEs
        gsm-message                     CHOICE {
            -- In the single-GSM-Message case the following rules apply:
            -- 1> the GSM message directly follows the basic production; the final padding that
            --    results when PER encoding the abstract syntax value is removed prior to appending
            --    the GSM message.
            -- 2> the RRC message excluding the GSM part, does not contain a length determinant;
            --    there is no explicit parameter indicating the size of the included GSM message.
            -- 3> depending on need, final padding (all “0”s) is added to ensure the final result
            --    comprises a full number of octets
            single-GSM-Message              SEQUENCE {},
            gsm-MessageList                 SEQUENCE {
                gsm-Messages                    GSM-MessageList
            }
        }
}

HandoverFromUTRANCommand-GERANIu ::= CHOICE {
    r5                                  SEQUENCE {
        handoverFromUTRANCommand-GERANIu-r5
                                        HandoverFromUTRANCommand-GERANIu-r5-IEs,
        -- UTRAN should not include the IE nonCriticalExtensions when it sets
        -- the IE geranIu-message included in handoverFromUTRANCommand-GERANIu-r5 to
        -- single-GERANIu-Message
        -- The UE behaviour upon receiving a message including this combination of IE values is
        -- not specified
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    later-than-r5                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}
```

```
HandoverFromUTRANCommand-GERANIu-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        activationTime                  ActivationTime                      OPTIONAL,
    -- Measurement IEs
        frequency-Band                  Frequency-Band,
    -- Other IEs
        geranIu-Message                     CHOICE {
            -- In the single-GERANIu-Message case the following rules apply:
            -- 1> the GERAN Iu message directly follows the basic production; the final padding that
            --    results when PER encoding the abstract syntax value is removed prior to appending
            --    the GERAN Iu message.
            -- 2> the RRC message excluding the GERAN Iu part does not contain a length determinant;
            --    there is no explicit parameter indicating the size of the included GERAN Iu
            --    message.
            -- 3> depending on need, final padding (all “0”s) is added to ensure the final result
            --    comprises a full number of octets.
            single-GERANIu-Message          SEQUENCE {},
            geranIu-MessageList             SEQUENCE {
                geranIu-Messages                GERANIu-MessageList
            }
        }
}

HandoverFromUTRANCommand-CDMA2000 ::= CHOICE {
    r3                              SEQUENCE {
        handoverFromUTRANCommand-CDMA2000-r3
                                        HandoverFromUTRANCommand-CDMA2000-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

HandoverFromUTRANCommand-CDMA2000-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        activationTime                  ActivationTime                      OPTIONAL,
    -- Radio bearer IEs
        toHandover-Info                 RAB-Info                            OPTIONAL,
    -- Other IEs
        cdma2000-MessageList            CDMA2000-MessageList
}

-- **************************************************
--
-- HANDOVER FROM UTRAN FAILURE
--
-- **************************************************

HandoverFromUTRANFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Other IEs
        interRAT-HO-FailureCause        InterRAT-HO-FailureCause            OPTIONAL,
        -- In case the interRATMessage to be transferred is for GERAN Iu mode, the
        -- message should be placed in the HandoverFromUtranFailure-v5xyext-IEs
        -- non-critical extension container.
        interRATMessage                 CHOICE {
            gsm                             SEQUENCE {
                gsm-MessageList                     GSM-MessageList
            },
            cdma2000                            SEQUENCE {
                cdma2000-MessageList                CDMA2000-MessageList
            }
        }               OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            handoverFromUTRANFailure-r3-add-ext      BIT STRING  OPTIONAL,
            v5xyNonCriticalExtensions       SEQUENCE {
                handoverFromUTRANFailure-v5xyext    HandoverFromUtranFailure-v5xyext-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
}
```

```
HandoverFromUtranFailure-v5xyext-IEs ::= SEQUENCE {
    geranIu-MessageList                     GERANIu-MessageList
}

-- **************************************************
--
-- INTER RAT HANDOVER INFO
--
-- **************************************************

InterRATHandoverInfo ::= SEQUENCE {
    -- This structure is defined for historical reasons, backward compatibility with 04.18
    predefinedConfigStatusList      CHOICE {
        absent                          NULL,
        present                         PredefinedConfigStatusList
    },
    uE-SecurityInformation          CHOICE {
        absent                          NULL,
        present                         UE-SecurityInformation
    },
    ue-CapabilityContainer          CHOICE {
        absent                          NULL,
        -- present is an octet aligned string containing IE UE-RadioAccessCapabilityInfo
        present                         OCTET STRING (SIZE (0..63))
    },
    -- Non critical extensions
    v390NonCriticalExtensions       CHOICE {
        absent                          NULL,
        present                         SEQUENCE {
            interRATHandoverInfo-v390ext    InterRATHandoverInfo-v390ext-IEs,
            v3a0NonCriticalExtensions       SEQUENCE  {
                interRATHandoverInfo-v3a0ext    InterRATHandoverInfo-v3a0ext,
                laterNonCriticalExtensions      SEQUENCE {
                    interRATHandoverInfo-v3d0ext    InterRATHandoverInfo-v3d0ext-IEs,
                    -- Container for additional R99 extensions
                    interRATHandoverInfo-r3-add-ext     BIT STRING  OPTIONAL,
                    v4xyNonCriticalExtensions       SEQUENCE {
                        interRATHandoverInfo-v4xyext    InterRATHandoverInfo-v4xyext-IEs,
                        -- Reserved for future non critical extension
                        v5xyNonCriticalExtensions       SEQUENCE {
                            interRATHandoverInfo-v5xyext    InterRATHandoverInfo-v5xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }
    }
}

InterRATHandoverInfo-v390ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v380ext    UE-RadioAccessCapability-v380ext        OPTIONAL,
        dl-PhysChCapabilityFDD-v380ext      DL-PhysChCapabilityFDD-v380ext
}

InterRATHandoverInfo-v3a0ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v3a0ext    UE-RadioAccessCapability-v3a0ext        OPTIONAL
}

InterRATHandoverInfo-v3d0ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        uESpecificBehaviourInformation1interRAT     UESpecificBehaviourInformation1interRAT
    OPTIONAL
}


InterRATHandoverInfo-v4xyext-IEs ::= SEQUENCE {
    -- User equipment IEs
        accessStratumReleaseIndicator       AccessStratumReleaseIndicator
}

InterRATHandoverInfo-v5xyext-IEs ::= SEQUENCE {
    -- User equipment IEs

        predefinedConfigStatusListComp      PredefinedConfigStatusListComp          OPTIONAL,
        ue-RadioAccessCapabilityComp        UE-RadioAccessCapabilityComp            OPTIONAL,
```

```
    -- Other IEs
        ue-RATSpecificCapability-r5         InterRAT-UE-RadioAccessCapabilityList-r5    OPTIONAL
}


-- **************************************************
--
-- RADIO BEARER RECONFIGURATION
--
-- **************************************************

RadioBearerReconfiguration ::= CHOICE {
    r3                          SEQUENCE {
        radioBearerReconfiguration-r3   RadioBearerReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            radioBearerReconfiguration-v3a0ext  RadioBearerReconfiguration-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerReconfiguration-r3-add-ext       BIT STRING      OPTIONAL,
                v4xyNonCriticalExtensions           SEQUENCE {
                    radioBearerReconfiguration-v4xyext
                                                    RadioBearerReconfiguration-v4xyext-IEs,
                    nonCriticalExtensions               SEQUENCE {} OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3               SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerReconfiguration-r4   RadioBearerReconfiguration-r4-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    radioBearerReconfiguration-r5       RadioBearerReconfiguration-r5-IEs,
                    nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                },
                criticalExtensions              SEQUENCE {}
            }
        }
    }
}

RadioBearerReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        -- NOTE: IE rb-InformationReconfigList should be optional in later versions
        -- of this message
        rb-InformationReconfigList      RB-InformationReconfigList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-DeletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
```

```
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfo2List        OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        -- NOTE: IE dl-InformationPerRL-List should be optional in later versions
        -- of this message
        dl-InformationPerRL-List        DL-InformationPerRL-List
}

RadioBearerReconfiguration-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

RadioBearerReconfiguration-v4xyext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL                         SSDT-UL-r4                          OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List             OPTIONAL
}

RadioBearerReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList-r4       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfo2List        OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RadioBearerReconfiguration-r5-IEs ::= SEQUENCE {
```

```
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
            -- Radio bearer IEs
                rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
                rb-InformationReconfigList      RB-InformationReconfigList-r5       OPTIONAL,
                rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
                rb-PDCPContextRelocationList    RB-PDCPContextRelocationList        OPTIONAL,
            -- Transport channel IEs
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
                ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
                modeSpecificTransChInfo         CHOICE {
                    fdd                             SEQUENCE {
                        cpch-SetID                      CPCH-SetID                  OPTIONAL,
                        addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
                    },
                    tdd                             NULL
                }                                                                   OPTIONAL,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
                dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5            OPTIONAL,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
            },
            preconfiguration                SEQUENCE {
            -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
            -- one for the FDD only elements and one for the TDD only elements, so that one
            -- FDD/TDD choice in this level is sufficient.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r4
                    }
                }
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}


-- **************************************************
--
-- RRC CONNECTION SETUP COMPLETE
--
-- **************************************************

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
```

```
    --  Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- Non critical extensions
        v370NonCriticalExtensions           SEQUENCE {
            rrcConnectionSetupComplete-v370ext  RRCConnectionSetupComplete-v370ext,
            v380NonCriticalExtensions           SEQUENCE {
                rrcConnectionSetupComplete-v380ext  RRCConnectionSetupComplete-v380ext-IEs,
                -- Reserved for future non critical extension
                v3a0NonCriticalExtensions           SEQUENCE {
                    rrcConnectionSetupComplete-v3a0ext  RRCConnectionSetupComplete-v3a0ext,
                    laterNonCriticalExtensions          SEQUENCE {
                        -- Container for additional R99 extensions
                        rrcConnectionSetupComplete-r3-add-ext       BIT STRING      OPTIONAL,
                        v4xyNonCriticalExtensions           SEQUENCE {
                            rrcConnectionSetupComplete-v4xyext  RRCConnectionSetupComplete-v4xyext-IEs,
                            v5xyNonCriticalExtensions           SEQUENCE {
                                rrcConnectionSetupComplete-v5xyext      RRCConnectionSetupComplete-
v5xyext-IEs,
                                nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

RRCConnectionSetupComplete-v370ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v370ext    UE-RadioAccessCapability-v370ext    OPTIONAL
}

RRCConnectionSetupComplete-v380ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v380ext    UE-RadioAccessCapability-v380ext        OPTIONAL,
        dl-PhysChCapabilityFDD-v380ext      DL-PhysChCapabilityFDD-v380ext
}

RRCConnectionSetupComplete-v3a0ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v3a0ext    UE-RadioAccessCapability-v3a0ext    OPTIONAL
}

RRCConnectionSetupComplete-v4xyext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v4xyext        UE-RadioAccessCapability-v4xyext
}

RRCConnectionSetupComplete-v5xyext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v5xyext        UE-RadioAccessCapability-v5xyext,
    -- Other IEs
        ue-RATSpecificCapability-r5             InterRAT-UE-RadioAccessCapabilityList-r5    OPTIONAL
}


-- **************************************************
--
-- UE CAPABILITY INFORMATION
--
-- **************************************************

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier           OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList
    OPTIONAL,
        v370NonCriticalExtensions           SEQUENCE {
            ueCapabilityInformation-v370ext UECapabilityInformation-v370ext,
            v380NonCriticalExtensions           SEQUENCE {
                ueCapabilityInformation-v380ext     UECapabilityInformation-v380ext-IEs,
                v3a0NonCriticalExtensions           SEQUENCE {
                    ueCapabilityInformation-v3a0ext     UECapabilityInformation-v3a0ext,
                    laterNonCriticalExtensions          SEQUENCE {
                        -- Container for additional R99 extensions
                        ueCapabilityInformation-r3-add-ext      BIT STRING      OPTIONAL,
```

```
                        -- Reserved for future non critical extension
                        v4xyNonCriticalExtensions           SEQUENCE {
                            ueCapabilityInformation-v4xyext     UECapabilityInformation-v4xyext,
                            v5xyNonCriticalExtensions           SEQUENCE {
                                ueCapabilityInformation-v5xyext     UECapabilityInformation-v5xyext,
                                nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

UECapabilityInformation-v370ext::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v370ext        UE-RadioAccessCapability-v370ext        OPTIONAL
}

UECapabilityInformation-v380ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v380ext        UE-RadioAccessCapability-v380ext
    OPTIONAL,
        dl-PhysChCapabilityFDD-v380ext          DL-PhysChCapabilityFDD-v380ext
}

UECapabilityInformation-v3a0ext::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v3a0ext        UE-RadioAccessCapability-v3a0ext        OPTIONAL
}

UECapabilityInformation-v4xyext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v4xyext    UE-RadioAccessCapability-v4xyext
}

UECapabilityInformation-v5xyext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v5xyext        UE-RadioAccessCapability-v5xyext        OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability-r5             InterRAT-UE-RadioAccessCapabilityList-r5    OPTIONAL
}
```

11.3 Information element definitions

```
-- **************************************************
--
--     OTHER INFORMATION ELEMENTS (10.3.8)
--
-- **************************************************

GERANIu-MessageList ::=             SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..32768))

GERANIu-RadioAccessCapability ::=   BIT STRING (SIZE (1..170))

InterRAT-UE-RadioAccessCapability ::= CHOICE {
    gsm                                 SEQUENCE {
        gsm-Classmark2                      GSM-Classmark2,
        gsm-Classmark3                      GSM-Classmark3
    },
    cdma2000                            SEQUENCE {
        cdma2000-MessageList                CDMA2000-MessageList
    }
}

InterRAT-UE-RadioAccessCapability-r5 ::= CHOICE {
    gsm                                 SEQUENCE {
        gsm-Classmark2                      GSM-Classmark2,
        gsm-Classmark3                      GSM-Classmark3
    },
    geranIu                             SEQUENCE {
        geranIu-RadioAccessCapability       GERANIu-RadioAccessCapability
    },
    cdma2000                            SEQUENCE {
        cdma2000-MessageList                CDMA2000-MessageList
```

```
    }
}

InterRAT-UE-RadioAccessCapabilityList ::=   SEQUENCE (SIZE(1..maxInterSysMessages)) OF
                                            InterRAT-UE-RadioAccessCapability

InterRAT-UE-RadioAccessCapabilityList-r5 ::=    SEQUENCE (SIZE(1..maxInterSysMessages)) OF
                                                InterRAT-UE-RadioAccessCapability-r5
```

11.5 RRC information between network nodes

```
Internode-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    HandoverToUTRANCommand,
    MeasurementReport,
    PhysicalChannelReconfiguration,
    RadioBearerReconfiguration,
    RadioBearerRelease,
    RadioBearerSetup,
    RRC-FailureInfo-r3-IEs,
    TransportChannelReconfiguration
FROM PDU-definitions

-- Core Network IEs :
    CN-DomainIdentity,
    CN-DomainInformationList,
    CN-DomainInformationListFull,
    CN-DRX-CycleLengthCoefficient,
    NAS-SystemInformationGSM-MAP,
-- UTRAN Mobility IEs :
    CellIdentity,
    URA-Identity,
-- User Equipment IEs :
    AccessStratumReleaseIndicator,
    C-RNTI,
    ChipRateCapability,
    DL-PhysChCapabilityFDD-v380ext,
    DL-PhysChCapabilityTDD,
    DL-PhysChCapabilityTDD-LCR-r4,
    GSM-Measurements,
    FailureCauseWithProtErr,
    MaxHcContextSpace,
    MaxNoPhysChBitsReceived,
    MaxROHC-ContextSessions-r4,
    NetworkAssistedGPS-Supported,
    RadioFrequencyBandTDDList,
    RLC-Capability,
    RRC-MessageSequenceNumber,
    SecurityCapability,
    SimultaneousSCCPCH-DPCH-Reception,
    STARTList,
    STARTSingle,
    START-Value,
    SupportOfDedicatedPilotsForChEstimation,
    TransportChannelCapability,
    TxRxFrequencySeparation,
    U-RNTI,
    UE-MultiModeRAT-Capability,
    UE-PowerClass-v370,
    UE-RadioAccessCapabBandFDDList,
    UE-RadioAccessCapability,
    UE-RadioAccessCapability-v370ext,
    UE-RadioAccessCapability-v380ext,
    UE-RadioAccessCapability-v3a0ext,
    UE-RadioAccessCapability-v4xyext,
    UE-RadioAccessCapability-v5xyext,
    UL-PhysChCapabilityFDD,
    UL-PhysChCapabilityTDD,
    UL-PhysChCapabilityTDD-LCR-r4,
-- Radio Bearer IEs :
    PredefinedConfigStatusList,
    PredefinedConfigValueTag,
```

```
    RAB-InformationSetupList,
    RAB-InformationSetupList-r4,
    RAB-Identity,
    RB-Identity,
    RB-Identity,
    SRB-InformationSetupList,
-- Transport Channel IEs :
    CPCH-SetID,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DRAC-StaticInformationList,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
    UL-AddReconfTransChInfoList,
-- Measurement IEs :
    MeasurementIdentity,
    MeasurementReportingMode,
    MeasurementType,
    MeasurementType-r4,
    AdditionalMeasurementID-List,
    PositionEstimate,
-- Other IEs :
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapabilityList-r5,
    UESpecificBehaviourInformation1idle,
    UESpecificBehaviourInformation1interRAT

FROM InformationElements

    maxCNdomains,
    maxNoOfMeas,

    maxRB,
    maxRBallRABs,
    maxRFC3095-CID,
    maxSRBsetup
FROM Constant-definitions
;

-- Part 1: Class definitions similar to what has been defined in 11.1 for RRC messages
-- Information that is tranferred in the same direction and across the same path is grouped

-- **************************************************
--
-- RRC information, to target RNC
--
-- **************************************************
-- RRC Information to target RNC sent either from source RNC or from another RAT

ToTargetRNC-Container ::= CHOICE {
    interRATHandoverInfo                InterRATHandoverInfoWithInterRATCapabilities-r3,
    srncRelocation                      SRNC-RelocationInfo-r3,
    rfc3095-ContextInfo                 RFC3095-ContextInfo-r5,
    extension                           NULL
}

-- **************************************************
--
-- RRC information, target RNC to source RNC
--
-- **************************************************


Target-RNC-ToSourceRNC-Container ::= CHOICE {
    radioBearerSetup                    RadioBearerSetup,
    radioBearerReconfiguration          RadioBearerReconfiguration,
    radioBearerRelease                  RadioBearerRelease,
    transportChannelReconfiguration     TransportChannelReconfiguration,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration,
    rrc-FailureInfo                     RRC-FailureInfo-r3-IEs,
    dL-DCCHmessage                      OCTET STRING,
    extension                           NULL
}

-- Part 2: Container definitions, similar to the PDU definitions in 11.2 for RRC messages
-- In alphabetical order
```

```
-- **************************************************
--
-- Handover to UTRAN information
--
-- **************************************************

InterRATHandoverInfoWithInterRATCapabilities-r3 ::= CHOICE {
    r3                              SEQUENCE {
        -- IE InterRATHandoverInfoWithInterRATCapabilities-r3-IEs also
        -- includes non critical extensions
        interRATHandoverInfo-r3         InterRATHandoverInfoWithInterRATCapabilities-r3-IEs,
        v390NonCriticalExtensions           SEQUENCE {
            interRATHandoverInfoWithInterRATCapabilities-v390ext
    InterRATHandoverInfoWithInterRATCapabilities-v390ext-IEs,
            -- Reserved for future non critical extension
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }       OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

InterRATHandoverInfoWithInterRATCapabilities-r3-IEs::=      SEQUENCE {
        -- The order of the IEs may not reflect the tabular format
        --  but has been chosen to simplify the handling of the information in the BSC
    --  Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
        -- interRATHandoverInfo, Octet string is used to obtain 8 bit length field prior to
        -- actual information.  This makes it possible for BSS to transparently handle information
        -- received via GSM air interface even when it includes non critical extensions.
        -- The octet string shall include the InterRATHandoverInfo information
        -- The BSS can re-use the 04.18 length field received from the MS
        interRATHandoverInfo            OCTET STRING (SIZE (0..255))
}

InterRATHandoverInfoWithInterRATCapabilities-v390ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        failureCauseWithProtErr             FailureCauseWithProtErr                 OPTIONAL
}

-- **************************************************
--
-- RFC3095 context, source RNC to target RNC
--
-- **************************************************

RFC3095-ContextInfo-r5 ::= CHOICE {
    r5                              SEQUENCE {
        rFC3095-ContextInfoList-r5      RFC3095-ContextInfoList-r5,
        -- Reserved for future non critical extension
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RFC3095-ContextInfoList-r5  ::=     SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                        RFC3095-ContextInfo


-- **************************************************
--
-- SRNC Relocation information
--
-- **************************************************

SRNC-RelocationInfo-r3 ::= CHOICE {
    r3                              SEQUENCE {
        sRNC-RelocationInfo-r3          SRNC-RelocationInfo-r3-IEs,
            v380NonCriticalExtensions           SEQUENCE {
                sRNC-RelocationInfo-v380ext SRNC-RelocationInfo-v380ext-IEs,
                -- Reserved for future non critical extension
                v390NonCriticalExtensions           SEQUENCE {
                    sRNC-RelocationInfo-v390ext         SRNC-RelocationInfo-v390ext-IEs,
                    v3a0NonCriticalExtensions           SEQUENCE {
                        sRNC-RelocationInfo-v3a0ext         SRNC-RelocationInfo-v3a0ext-IEs,
                        v3b0NonCriticalExtensions           SEQUENCE {
                            sRNC-RelocationInfo-v3b0ext         SRNC-RelocationInfo-v3b0ext-IEs,
```

```
                            v3c0NonCriticalExtensions           SEQUENCE {
                                sRNC-RelocationInfo-v3c0ext         SRNC-RelocationInfo-v3c0ext-IEs,
                                laterNonCriticalExtensions          SEQUENCE {
                                    sRNC-RelocationInfo-v3d0ext         SRNC-RelocationInfo-v3d0ext-
IEs,
                                    -- Container for additional R99 extensions
                                    sRNC-RelocationInfo-r3-add-ext      BIT STRING      OPTIONAL,
                                    v4xyNonCriticalExtensions           SEQUENCE {
                                        sRNC-RelocationInfo-v4xyext         SRNC-RelocationInfo-
v4xyext-IEs,
                                        v5xyNonCriticalExtensions           SEQUENCE {
                                            sRNC-RelocationInfo-v5xyext         SRNC-RelocationInfo-
v5xyext-IEs,
                                            -- Reserved for future non critical extension
                                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                                        }       OPTIONAL
                                    }       OPTIONAL
                                }       OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
    },
    later-than-r3                   CHOICE {
        r4                              SEQUENCE {
            sRNC-RelocationInfo-r4          SRNC-RelocationInfo-r4-IEs,
            v5xyNonCriticalExtensions       SEQUENCE {
                sRNC-RelocationInfo-v5xyext         SRNC-RelocationInfo-v5xyext-IEs,
                nonCriticalExtensions           SEQUENCE {} OPTIONAL
                } OPTIONAL
            },
        criticalExtensions                  SEQUENCE {}
    }
}

SRNC-RelocationInfo-r3-IEs ::=      SEQUENCE {
    -- Non-RRC IEs
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
    -- Ciphering related information IEs
    -- If the extension v380 is included use the extension for the ciphering status per CN domain
        cipheringStatus                 CipheringStatus,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        -- The order of occurrence in the IE cipheringInfoPerRB-List is the
        -- same as the RBs in SRB-InformationSetupList in RAB-InformationSetupList.
        -- The signalling RBs are supposed to be listed
        -- first. Only UM and AM RBs that are ciphered are listed here
        cipheringInfoPerRB-List         CipheringInfoPerRB-List             OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        integrityProtectionStatus       IntegrityProtectionStatus,
         -- In the IE srb-SpecificIntegrityProtInfo, the first information listed corresponds to
         -- signalling radio bearer RB0 and after the order of occurrence is the same as the SRBs in
         -- SRB-InformationSetupList
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationList            OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList                  OPTIONAL,
    -- Radio bearer IEs
        predefinedConfigStatusList      PredefinedConfigStatusList,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList            OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
```

```
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList         OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL
}

SRNC-RelocationInfo-v380ext-IEs ::= SEQUENCE {
    -- Ciphering related information IEs
        cn-DomainIdentity                   CN-DomainIdentity,
        cipheringStatusList                 CipheringStatusList
}

SRNC-RelocationInfo-v390ext-IEs ::= SEQUENCE {
        cn-DomainInformationList-v390ext    CN-DomainInformationList-v390ext        OPTIONAL,
        ue-RadioAccessCapability-v370ext    UE-RadioAccessCapability-v370ext        OPTIONAL,
        ue-RadioAccessCapability-v380ext    UE-RadioAccessCapability-v380ext        OPTIONAL,
        dl-PhysChCapabilityFDD-v380ext      DL-PhysChCapabilityFDD-v380ext,
        failureCauseWithProtErr             FailureCauseWithProtErr                 OPTIONAL
}

SRNC-RelocationInfo-v3a0ext-IEs ::= SEQUENCE {
        -- cn-domain identity for IE startValueForCiphering-v3a0ext is specified
        -- in subsequent extension (SRNC-RelocationInfo-v3b0ext-IEs)
        startValueForCIphering-v3a0ext      START-Value,
        cipheringInfoForSRB1-v3a0ext        CipheringInfoForSRB1-v3a0ext,
        ue-RadioAccessCapability-v3a0ext    UE-RadioAccessCapability-v3a0ext        OPTIONAL
}

SRNC-RelocationInfo-v3b0ext-IEs ::= SEQUENCE {
        -- cn-domain identity for IE startValueForCiphering-v3a0ext included in previous extension
        cn-DomainIdentity               CN-DomainIdentity,
        -- the IE startValueForCiphering-v3b0ext contains the start values for each CN Domain. The
        -- value of start indicated by the IE startValueForCiphering-v3a0ext should be set to the
        -- same value as the start-Value for the corresponding cn-DomainIdentity in the IE
        -- startValueForCiphering-v3b0ext
        startValueForCiphering-v3b0ext      STARTList2                              OPTIONAL
}

SRNC-RelocationInfo-v3c0ext-IEs ::= SEQUENCE {
        -- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
        -- to send the message contained in the IE “TargetRNC-ToSourceRNC-Container”.
        -- Only included if type is “UE involved”
        rb-IdentityForHOMessage         RB-Identity         OPTIONAL
}

SRNC-RelocationInfo-v3d0ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        uESpecificBehaviourInformation1idle     UESpecificBehaviourInformation1idle     OPTIONAL,
        uESpecificBehaviourInformation1interRAT     UESpecificBehaviourInformation1interRAT
    OPTIONAL
}

STARTList2 ::=                      SEQUENCE (SIZE (2..maxCNdomains)) OF
                                        STARTSingle

SRNC-RelocationInfo-v4xyext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v4xyext    UE-RadioAccessCapability-v4xyext
}

SRNC-RelocationInfo-v5xyext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v5xyext    UE-RadioAccessCapability-v5xyext,
        ue-RATSpecificCapability-r5         InterRAT-UE-RadioAccessCapabilityList-r5    OPTIONAL
}

CipheringInfoForSRB1-v3a0ext ::= SEQUENCE {
        dl-UM-SN                            BIT STRING (SIZE (7))
}

CipheringStatusList ::=         SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        CipheringStatusCNdomain

CipheringStatusCNdomain ::=             SEQUENCE {
```

```
        cn-DomainIdentity               CN-DomainIdentity,
        cipheringStatus                 CipheringStatus
}

SRNC-RelocationInfo-r4-IEs ::=          SEQUENCE {
    -- Non-RRC IEs
        -- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
        -- to send the message contained in the IE "TargetRNC-ToSourceRNC-Container".
        -- Only included if type is "UE involved"
        rb-IdentityForHOMessage         RB-Identity                         OPTIONAL,
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
    -- Ciphering related information IEs
        cipheringStatusList             CipheringStatusList-r4,
        latestConfiguredCN-Domain       CN-DomainIdentity,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        cipheringInfoPerRB-List         CipheringInfoPerRB-List-r4          OPTIONAL,
    -- Integrity protection related information IEs
        integrityProtectionStatus       IntegrityProtectionStatus,
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability-r4,
        ue-RadioAccessCapability-ext    UE-RadioAccessCapabBandFDDList      OPTIONAL,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
        uESpecificBehaviourInformation1idle     UESpecificBehaviourInformation1idle     OPTIONAL,
        uESpecificBehaviourInformation1interRAT     UESpecificBehaviourInformation1interRAT
    OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationListFull        OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList-r4               OPTIONAL,
    -- Radio bearer IEs
        predefinedConfigStatusList      PredefinedConfigStatusList,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList-r4         OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL,
        failureCause                    FailureCauseWithProtErr             OPTIONAL
}

-- IE definitions

CalculationTimeForCiphering ::=     SEQUENCE {
    cell-Id                             CellIdentity,
    sfn                                 INTEGER (0..4095)
}

CipheringInfoPerRB ::=              SEQUENCE {
    dl-HFN                              BIT STRING (SIZE (20..25)),
    ul-HFN                              BIT STRING (SIZE (20..25))
}

CipheringInfoPerRB-r4 ::=           SEQUENCE {
    rb-Identity                         RB-Identity,
    dl-HFN                              BIT STRING (SIZE (20..25)),
    dl-UM-SN                            BIT STRING (SIZE (7))               OPTIONAL,
    ul-HFN                              BIT STRING (SIZE (20..25))
```

```
}

-- TABULAR: CipheringInfoPerRB-List, multiplicity value numberOfRadioBearers
-- has been replaced with maxRB.
CipheringInfoPerRB-List ::=         SEQUENCE (SIZE (1..maxRB)) OF
                                        CipheringInfoPerRB

CipheringInfoPerRB-List-r4 ::=      SEQUENCE (SIZE (1..maxRB)) OF
                                        CipheringInfoPerRB-r4


CipheringStatus ::=                 ENUMERATED {
                                        started, notStarted }

CipheringStatusList-r4 ::=          SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        CipheringStatusCNdomain-r4

CipheringStatusCNdomain-r4 ::=      SEQUENCE {
        cn-DomainIdentity               CN-DomainIdentity,
        cipheringStatus                 CipheringStatus,
        start-Value                     START-Value
}

CN-DomainInformation-v390ext ::=        SEQUENCE {
    cn-DRX-CycleLengthCoeff             CN-DRX-CycleLengthCoefficient
}

CN-DomainInformationList-v390ext ::=    SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        CN-DomainInformation-v390ext

CompressedModeMeasCapability-r4 ::= SEQUENCE {
    fdd-Measurements                    BOOLEAN,
    -- TABULAR: The IEs tdd-Measurements, gsm-Measurements and multiCarrierMeasurements
    -- are made optional since they are conditional based on another information element.
    -- Their absence corresponds to the case where the condition is not true.
    tdd384-Measurements                 BOOLEAN                             OPTIONAL,
    tdd128-Measurements                 BOOLEAN                             OPTIONAL,
    gsm-Measurements                    GSM-Measurements                    OPTIONAL,
    multiCarrierMeasurements            BOOLEAN                             OPTIONAL
}

COUNT-C-List ::=                        SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        COUNT-CSingle

COUNT-CSingle ::=                       SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    count-C                             BIT STRING (SIZE (32))
}

DL-PhysChCapabilityFDD-r4 ::=       SEQUENCE {
    maxNoDPCH-PDSCH-Codes               INTEGER (1..8),
    maxNoPhysChBitsReceived             MaxNoPhysChBitsReceived,
    supportForSF-512                    BOOLEAN,
    supportOfPDSCH                      BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception   SimultaneousSCCPCH-DPCH-Reception,
    supportOfDedicatedPilotsForChEstimation     SupportOfDedicatedPilotsForChEstimation     OPTIONAL
}

DL-RFC3095-Context ::=              SEQUENCE {
    rfc3095-Context-Identity            INTEGER (0..16383),
    dl-mode                             ENUMERATED {u, o, r},
    dl-ref-ir                           OCTET STRING ( SIZE (1..3000)),
    dl-ref-time                         INTEGER (0..4294967295)     OPTIONAL,
    dl-curr-time                        INTEGER (0..4294967295)     OPTIONAL,
    dl-syn-offset-id                    INTEGER (0..65535)          OPTIONAL,
    dl-syn-slope-ts                     INTEGER (0..4294967295)     OPTIONAL,
    dl-dyn-changed                      BOOLEAN
}

ImplementationSpecificParams ::=    BIT STRING (SIZE (1..512))


IntegrityProtectionStatus ::=       ENUMERATED {
                                        started, notStarted }

MeasurementCapability-r4 ::=        SEQUENCE {
    downlinkCompressedMode              CompressedModeMeasCapability-r4,
    uplinkCompressedMode                CompressedModeMeasCapability-r4
```

```
}

MeasurementCommandWithType ::=      CHOICE {
    setup                               MeasurementType,
    modify                              NULL,
    release                             NULL
}

MeasurementCommandWithType-r4 ::=   CHOICE {
    setup                               MeasurementType-r4,
    modify                              NULL,
    release                             NULL
}

OngoingMeasRep ::=                  SEQUENCE {
    measurementIdentity         MeasurementIdentity,
    -- TABULAR: The CHOICE Measurement in the tabular description is included
    -- in MeasurementCommandWithType
    measurementCommandWithType          MeasurementCommandWithType,
    measurementReportingMode            MeasurementReportingMode            OPTIONAL,
    additionalMeasurementID-List        AdditionalMeasurementID-List        OPTIONAL
}

OngoingMeasRep-r4 ::=               SEQUENCE {
    measurementIdentity         MeasurementIdentity,
    -- TABULAR: The CHOICE Measurement in the tabular description is included
    -- in MeasurementCommandWithType-r4.
    measurementCommandWithType          MeasurementCommandWithType-r4,
    measurementReportingMode            MeasurementReportingMode            OPTIONAL,
    additionalMeasurementID-List        AdditionalMeasurementID-List        OPTIONAL
}

OngoingMeasRepList ::=              SEQUENCE (SIZE (1..maxNoOfMeas)) OF
                                        OngoingMeasRep

OngoingMeasRepList-r4 ::=           SEQUENCE (SIZE (1..maxNoOfMeas)) OF
                                        OngoingMeasRep-r4

PDCP-Capability-r4 ::=              SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    supportForRfc2507                   CHOICE {
        notSupported                        NULL,
        supported                           MaxHcContextSpace
    },
    supportForRfc3095                   CHOICE {
        notSupported                        NULL,
        supported                           SEQUENCE {
            maxROHC-ContextSessions             MaxROHC-ContextSessions-r4  DEFAULT s16,
            reverseCompressionDepth             INTEGER (0..65535)          DEFAULT 0
        }
    }
}

PhysicalChannelCapability-r4 ::=        SEQUENCE {
        fddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD-r4,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
        }                                           OPTIONAL,
        tdd384-PhysChCapability             SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }                                           OPTIONAL,
        tdd128-PhysChCapability             SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD-LCR-r4,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD-LCR-r4
        }                                           OPTIONAL
}

RF-Capability-r4 ::=                SEQUENCE {
        fddRF-Capability                    SEQUENCE {
            ue-PowerClass                       UE-PowerClass-v370,
            txRxFrequencySeparation             TxRxFrequencySeparation
        }                                                               OPTIONAL,
        tdd384-RF-Capability                SEQUENCE {
            ue-PowerClass                       UE-PowerClass-v370,
            radioFrequencyBandTDDList           RadioFrequencyBandTDDList,
            chipRateCapability                  ChipRateCapability
        }                                                               OPTIONAL,
```

```
        tdd128-RF-Capability            SEQUENCE {
            ue-PowerClass                   UE-PowerClass-v370,
            radioFrequencyBandTDDList       RadioFrequencyBandTDDList,
            chipRateCapability              ChipRateCapability
        }                                                           OPTIONAL
}

RFC3095-ContextInfo ::=             SEQUENCE {
    rb-Identity                         RB-Identity,
    rfc3095-Context-List                RFC3095-Context-List
}

RFC3095-Context-List ::=            SEQUENCE (SIZE (1..maxRFC3095-CID)) OF SEQUENCE {
    dl-RFC3095-Context                  DL-RFC3095-Context      OPTIONAL,
    ul-RFC3095-Context                  UL-RFC3095-Context      OPTIONAL
 }

SRB-SpecificIntegrityProtInfo ::=   SEQUENCE {
    ul-RRC-HFN                          BIT STRING (SIZE (28)),
    dl-RRC-HFN                          BIT STRING (SIZE (28)),
    ul-RRC-SequenceNumber               RRC-MessageSequenceNumber,
    dl-RRC-SequenceNumber               RRC-MessageSequenceNumber
}

SRB-SpecificIntegrityProtInfoList ::= SEQUENCE (SIZE (4..maxSRBsetup)) OF
                                    SRB-SpecificIntegrityProtInfo

StateOfRRC ::=                      ENUMERATED {
                                        cell-DCH, cell-FACH,
                                        cell-PCH, ura-PCH }

StateOfRRC-Procedure ::=            ENUMERATED {
                                        awaitNoRRC-Message,
                                        awaitRB-ReleaseComplete,
                                        awaitRB-SetupComplete,
                                        awaitRB-ReconfigurationComplete,
                                        awaitTransportCH-ReconfigurationComplete,
                                        awaitPhysicalCH-ReconfigurationComplete,
                                        awaitActiveSetUpdateComplete,
                                        awaitHandoverComplete,
                                        sendCellUpdateConfirm,
                                        sendUraUpdateConfirm,
                                        -- dummy is not used in this version of specification
                                        -- It should not be sent
                                        dummy,
                                        otherStates
}

UE-Positioning-Capability-r4 ::=    SEQUENCE {
    standaloneLocMethodsSupported           BOOLEAN,
    ue-BasedOTDOA-Supported                 BOOLEAN,
    networkAssistedGPS-Supported            NetworkAssistedGPS-Supported,
    supportForUE-GPS-TimingOfCellFrames     BOOLEAN,
    supportForIPDL                          BOOLEAN,
    rx-tx-TimeDifferenceType2Capable        BOOLEAN,
    validity-CellPCH-UraPCH                 ENUMERATED { true (0 ) }    OPTIONAL
}

UE-Positioning-LastKnownPos ::=     SEQUENCE {
        sfn                             INTEGER (0..4095),
        cell-id                         CellIdentity,
        positionEstimate                PositionEstimate
}

UE-RadioAccessCapability-r4 ::=     SEQUENCE {
    accessStratumReleaseIndicator       AccessStratumReleaseIndicator,
    pdcp-Capability                     PDCP-Capability-r4,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability-r4,
    physicalChannelCapability           PhysicalChannelCapability-r4,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    ue-positioning-Capability           UE-Positioning-Capability-r4,
    measurementCapability               MeasurementCapability-r4        OPTIONAL
}

UL-RFC3095-Context ::=              SEQUENCE {
```

```
    rfc3095-Context-Identity            INTEGER (0..16383),
    ul-mode                             ENUMERATED {u, o, r},
    ul-ref-ir                           OCTET STRING ( SIZE (1..3000)),
    ul-ref-time                         INTEGER (0..4294967295)     OPTIONAL,
    ul-curr-time                        INTEGER (0..4294967295)     OPTIONAL,
    ul-syn-offset-id                    INTEGER (0..65535)          OPTIONAL,
    ul-syn-slope-ts                     INTEGER (0..4294967295)     OPTIONAL,
    ul-ref-sn-1                         INTEGER (0..65535)          OPTIONAL

}

END
```

14.12 Provision and reception of RRC information between network nodes

14.12.0 General

In certain cases, e.g., when performing handover to UTRAN or when performing SRNC relocation, RRC information may need to be transferred between UTRAN nodes, between UTRAN and another RAT, between nodes within another RAT or between the UE and another RAT.

The RRC information exchanged between network nodes or between the UE and another RAT is typically transferred by means of RRC information containers. An RRC information container is a self-contained and extensible RRC information unit that may be used to transfer a number of different RRC messages, one at a time. As stated before, RRC information containers may be used to transfer RRC messages across interfaces other than the Uu interface. The RRC messages that may be included in RRC information containers have similar characteristics as the RRC messages that are transferred across the Uu interface.

The RRC messages that are sent to/ from the UE, e.g., HANDOVER TO UTRAN COMMAND, INTER RAT HANDOVER INFO are covered by (sub)clauses 8, 9, 10, 11.0-11.4 and 12 of this specification. The following subclauses concern RRC messages exchanged between network nodes.

In future versions of this specification, it is possible to extend the RRC messages transferred across interfaces other than Uu. For these RRC messages the same extension mechanism applies as defined for RRC messages transferred across the Uu interface, as is specified in subclause 10.1, i.e., both critical and non-critical extensions may be added.

The transfer syntax for RRC information containers and RRC messages transferred between network nodes is derived from their ASN.1 definitions by use of Packed Encoding Rules, unaligned (X.691). It should be noted that the encoder adds final padding to achieve octet alignment. The resulting octet string is, carried in a container, transferred between the network nodes.

When using a separate RRC information container for each endpoint, the receiving RRC protocol entity is able to interpret the received container; this means that the receiver need not take into account information about the (network interface) message used in transferring the container.

The following encoding rules apply in addition to what has been specified in X.691 [49]:

1> When a bit string value is placed in a bit-field as specified in 15.6 to 15.11 in [11], the leading bit of the bit string value shall be placed in the leading bit of the bit-field, and the trailing bit of the bit string value shall be placed in the trailing bit of the bit-field.

NOTE: The terms "leading bit" and "trailing bit" are defined in ITU-T Rec. X.680 | ISO/IEC 8824-1. When using the "bstring" notation, the leading bit of the bit string value is on the left, and the trailing bit of the bit string value is on the right.

14.12.0a General error handling for RRC messages exchanged between network nodes

The error handling for RRC messages that are exchanged between network nodes applies the same principles as defined for other RRC messages.

Although the same principles apply for network nodes receiving unknown, unforeseen and erroneous RRC messages received in RRC information containers, the notification of the error should be done in a different manner, as specified in the following:

The network node receiving an invalid RRC message from another network node should:

1> if the received RRC message was unknown, unforeseen or erroneous:

2> prepare an RRC FAILURE INFO message, including the IE "Failure cause" set to "Protocol error" and the IE "Protocol error information" including an IE "Protocol error cause" which should be set as follows:

3> to "ASN.1 violation or encoding error" upon receiving an RRC message for which the encoded message does not result in any valid abstract syntax value;

3> to "Message type non-existent or not implemented" upon receiving an unknown RRC message type;

3> to "Message extension not comprehended" upon receiving an RRC message including an undefined critical message extension;

3> to "Information element value not comprehended" upon receiving an RRC message including an mandatory IE for which no default value is defined and for which either the value is set to spare or for which the encoded IE does not result in a valid transfer syntax. The same applies for conditional IEs, for which the conditions for presence are met, the IE is present but has a value set to spare or for which the encoded IE does not result in a valid transfer syntax;

3> to "Information element missing" upon receiving an RRC information container with an absent conditional IE for which the conditions for presence are met.

1> if there was another failure to perform the operation requested by the received RRC message:

2> prepare an RRC FAILURE INFO message, including the IE "Failure cause" set to a value that reflects the failure cause.

1> send the RRC FAILURE INFO message to the network node from which the invalid RRC protocol information was received.

NOTE 1: The appropriate (failure) messages used across the network interfaces may not support the inclusion of a RRC information container. In this case, the information contained in the RRC FAILURE INFO message may need to be transferred otherwise e.g. by mapping to a cause value (e.g. a cause value in the RR-HANDOVER FAILURE message when there is a error associated with the RRC-HANDOVER TO UTRAN COMMAND message).

NOTE 2 In case the RRC procedure used to perform SRNS relocation fails e.g. due to non comprehension, the source RNC may notify the target RNC by including the diagnostics information (IEs "Protocol error" and "Protocol error information") in the "RRC message "SRNS Relocation" Info sent in the RRC information container" used for a subsequent relocation request.

14.12.1 RRC Information to target RNC

The RRC information container "RRC Information to target RNC" may either be sent from source RNC or from another RAT. In case of handover to UTRAN, this information originates from another RAT, while in case of SRNC relocation the RRC information originates from the source RNC. In case of handover to UTRAN, the RRC information transferred may provide UTRAN specific information, as defined in the INTER RAT HANDOVER INFO WITH INTER RAT CAPABILITIES message, that the target RNC needs when preparing the handover command message. In case of SRNC relocation and handover from GERAN *Iu mode*, the RRC information transferred specifies the configuration of RRC and the lower layers it controls, e.g., including the radio bearer and transport channel configuration. It is used by the target RNC to initialise RRC and the lower layer protocols to facilitate SRNC relocation and handover from GERAN *Iu mode* in a manner transparent to the UE.

RFC 3095 CONTEXT INFO is used to transfer the compressor and decompressor context information of the RFC 3095 protocol from source RNC to target RNC.

Information Element/Group Name	Need	Multi	Type and reference	Semantics description	Version
CHOICE *case*	MP			At least one spare choice, Criticality: Reject, is needed	
>Handover to UTRAN			INTER RAT HANDOVER INFO WITH INTER RAT CAPABILITIES 14.12.4.1		
>SRNC relocation			SRNS RELOCATION INFO 14.12.4.2		
>RFC 3095 context info			RFC 3095 CONTEXT INFO 14.12.4.4		REL-5

14.12.2 RRC information, target RNC to source RNC

There are 2 possible cases for RNC relocation:

1. The UE is already under control of target RNC; and
2. The SRNC Relocation with Hard Handover (UE still under control of SRNC), but UE is moving to a location controlled by the target RNC (based on measurement information).

In case 1 the relocation is transparent to the UE and there is no "reverse" direction container. The SRNC just assigns the 'serving' function to the target RNC, which then becomes the Serving RNC.

In case 2 the relocation is initiated by SRNC, which also provides the RRC Initialisation Information to the target RNC. Base on this information, the target RNC prepares the Hard Handover Message ("Physical channel reconfiguration" (subclause 8.2.6), "radio bearer establishment" (subclause 8.2.1), "Radio bearer reconfiguration" (subclause 8.2.2), "Radio bearer release" (subclause 8.2.3) or "Transport channel reconfiguration" (subclause 8.2.4).

In case 2 two possibilities are defined in order to transmit the relocation message from the target RNC to the source RNC which can be chosen by the source RNC by including or not including the IE "RB Id for handover message" in the IE "SRNS Relocation Info".

In case the IE "RB Id for handover message" has been received by the target RNC in the IE "SRNS Relocation Info", the target RNC should choose the IE "DL DCCH message" and include the DL DCCH message that should be transmitted transparently to the UE by the source RNC. In that case, the target RNC is integrity protecting the message if applicable.

If the target RNC did not receive the IE "RB Id for handover message" in the IE "SRNS Relocation Info" the target RNC should use another choice. In that case, the source RNC should integrity protect the message before transmitting it to the UE if applicable.

The source RNC then transmits the Handover Message to the UE, which then performs the handover.

In the successful case, the UE transmits an XXX COMPLETE message, using the new configuration, to the target RNC.

In case of failure, the UE transmits an XXX FAILURE, using the old configuration, to the source RNC and the RRC context remains unchanged (has to be confirmed and checked with the SRNS relocation procedure).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *RRC message*	MP			At least one spare choice, Criticality: Reject, is needed
>RADIO BEARER SETUP			RADIO BEARER SETUP	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			10.2.31	
>RADIO BEARER RECONFIGURATION			RADIO BEARER RECONFIGURATION 10.2.25	
>RADIO BEARER RELEASE			RADIO BEARER RELEASE 10.2.28	
>TRANSPORT CHANNEL RECONFIGURATION			TRANSPORT CHANNEL RECONFIGURATION 10.2.51	
>PHYSICAL CHANNEL RECONFIGURATION			PHYSICAL CHANNEL RECONFIGURATION 10.2.20	
>RRC FAILURE INFO			RRC FAILURE INFO 10.2.41a	
>DL DCCH message			OCTET STRING	

14.12.3 Void

14.12.4 RRC messages exchanged between network nodes

14.12.4.0 HANDOVER TO UTRAN COMMAND

This RRC message is sent between network nodes to transfer the actual handover command including the details of the radio configuration to be used upon handover to UTRAN as compiled by the target RNC.

Direction: target RNC →source RAT

The message is exactly the same as the HANDOVER TO UTRAN COMMAND defined in subclause 10.2.16a.

14.12.4.0a INTER RAT HANDOVER INFO

This RRC message is sent between network nodes to transfer information relevant for the target RNC when preparing for handover to UTRAN.

Direction: source RNC/RAT→target RAT

The message is exactly the same as the INTER RAT HANDOVER INFO defined in subclause 10.2.16d

14.12.4.1 INTER RAT HANDOVER INFO WITH INTER RAT CAPABILITIES

This RRC message is sent between network nodes when preparing for an inter RAT handover to UTRAN.

Direction: source RAT→target RNC

Information Element/Group Name	Need	Multi	Type and reference	Semantics description

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
UE Information elements				
UE security information	OP		UE security information 10.3.3.42b	
UE capability container	OP			
>UE radio access capability	MP		UE radio access capability 10.3.3.42	
>UE radio access capability extension	MP		UE radio access capability extension 10.3.3.42a	Although this IE is not always required, the need has been set to MP to align with the ASN.1
>UE Specific Behaviour Information 1 interRAT	OP		UE Specific Behaviour Information 1 interRAT 10.3.3.52	This IE shall not be included in this version of the protocol
Non RRC IEs				
Radio Bearer IEs				
Predefined configuration status information	OP		Predefined configuration status information 10.3.4.5a	
Other Information elements				
UE system specific capability	OP	1 to <maxSystemCapability>		
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	
Failure cause	OP		Failure cause 10.3.3.13	Diagnostics information related to an earlier handover to UTRAN request
Protocol error information	CV-*ProtErr*		Protocol error information 10.3.8.12	

Condition	Explanation
ProtErr	This IE is mandatory present if the IE "Protocol error indicator" is included and has the value "TRUE". Otherwise it is not needed.

NOTE: The above table does not need to reflect the order of the information elements in the actual encoded message. The order, that is reflected in the ASN.1, should be chosen in a manner that avoids that network nodes need to perform reordering of information elements.

14.12.4.2 SRNS RELOCATION INFO

This RRC message is sent between network nodes when preparing for an SRNS relocation or a handover from GERAN *Iu mode*.

With the presence or absence of the IE "RB identity for Hard Handover message" the source RNC indicates to the target SRNC whether the source RNC expects to receive the choice "DL DCCH message" in the IE "RRC information, target

RNC to source RNC" in case the SRNS relocation is of type "UE involved". Furthermore the target RNC uses this information for the calculation of the MAC-I.

Direction: source RNC/RAT→target RNC

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
RB identity for Handover message	OP		RB identity 10.3.4.16	Gives the id of the radio bearer on which the source RNC will transmit the RRC message in the case the relocation is of type "UE involved". In handover from GERAN *Iu mode* this IE is always set to 2.
>State of RRC	MP		RRC state indicator, 10.3.3.35a	
>State of RRC procedure	MP		Enumerated (await no RRC message, await RB Release Complete, await RB Setup Complete, await RB Reconfiguration Complete, await Transport CH Reconfiguration Complete, await Physical CH Reconfiguration Complete, await Active Set Update Complete, await Handover Complete, send Cell Update Confirm, send URA Update Confirm, , others)	
Ciphering related information				
>Ciphering status for each CN domain	MP	<1 to maxCNDomains>		
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>Ciphering status	MP		Enumerated(Not started, Started)	
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>Latest configured CN domain	MP		CN domain identity 10.3.1.1	Value contained in the variable of the same name. In case this variable is empty, the source RNC can set any CN domain identity. In that case, the Ciphering status and the Integrity protection status should be Not started and the target RNC should not initialise the variable Latest configured CN domain.
>Calculation time for ciphering related information	CV-*Ciphering*			Time when the ciphering information of the message were calculated, relative to a cell of the target RNC. In handover from GERAN *Iu mode* this field is not present.
>>Cell Identity	MP		Cell Identity 10.3.2.2	Identity of one of the cells under the target RNC and included in the active set of the current call
>>SFN	MP		Integer(0..4095)	
>COUNT-C list	OP	1 to <maxCNdomains>		COUNT-C values for radio bearers using transparent mode RLC
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>COUNT-C	MP		Bit string(32)	
>Ciphering info per radio bearer	OP	1 to <maxRB>		For signalling radio bearers this IE is mandatory.
>>RB identity	MP		RB identity 10.3.4.16	
>>Downlink HFN	MP		Bit string(20..25)	This IE is either RLC AM HFN (20 bits) or RLC UM HFN (25 bits)
>>Downlink SN	CV-*SRB1*		Bit String(7)	VT(US) of RLC UM
>>Uplink HFN	MP		Bit string(20..25)	This IE is either RLC AM HFN (20 bits) or RLC UM HFN (25 bits)
Integrity protection related information				
>Integrity protection status	MP		Enumerated(Not started, Started)	
>Signalling radio bearer specific integrity protection information	CV-*IP*	4 to <maxSRBsetup>		
>>Uplink RRC HFN	MP		Bit string (28)	For each SRB, in the case activation times for the next IP configuration to be applied on this SRB have already been reached this IE corresponds to the last value used. Else this value corresponds to the value the source would have initalized the HFN to at the activation time. Increment of HFN due to RRC SN roll over is taken care of by target based on value sent by the source.
>>Downlink RRC HFN	MP		Bit string (28)	For each SRB, in the case activation times for the next IP configuration to be applied on

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
				this SRB have already been reached this IE corresponds to the last value used. Else this value corresponds to the value the source would have initalized the HFN to at the activation time. Increment of HFN due to RRC SN roll over is taken care of by target based on value sent by the source. In particular, for SRB2, this IE should not take into account the RRC message that will trigger the relocation.
>>Uplink RRC Message sequence number	MP		Integer (0..15)	For each SRB, this IE corresponds to the last value received or in the case activation time was not reached for a configuration the value equals (activation time -1).
>>Downlink RRC Message sequence number	MP		Integer (0..15)	For each SRB, this IE corresponds to the last value used or in the case activation time was not reached for a configuration the value equals (activation time -1). In particular, for SRB2, this IE should not take into account the RRC message that will trigger the relocation.
>Implementation specific parameters	OP		Bit string (1..512)	
RRC IEs				
UE Information elements				
>U-RNTI	MP		U-RNTI 10.3.3.47	G-RNTI is placed in this field when performing handover from GERAN *Iu mode.*
>C-RNTI	OP		C-RNTI 10.3.3.8	
>UE radio access Capability	MP		UE radio access capability 10.3.3.42	
>UE radio access capability extension	OP		UE radio access capability extension 10.3.3.42a	
>Last known UE position	OP			
>>SFN	MP		Integer (0..4095)	Time when position was estimated
>>Cell ID	MP		Cell identity; 10.3.2.2	Indicates the cell, the SFN is valid for.
>>CHOICE *Position estimate*	MP			
>>>Ellipsoid Point			Ellipsoid Point; 10.3.8.4a	
>>>Ellipsoid point with uncertainty circle			Ellipsoid point with uncertainty circle 10.3.8.4d	
>>>Ellipsoid point with uncertainty ellipse			Ellipsoid point with uncertainty	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			ellipse 10.3.8.4e	
>>>Ellipsoid point with altitude			Ellipsoid point with altitude 10.3.8.4b	
>>>Ellipsoid point with altitude and uncertainty ellipsoid			Ellipsoid point with altitude and uncertainty ellipsoid 10.3.8.4c	
>UE Specific Behaviour Information 1 idle	OP		UE Specific Behaviour Information idle 1 10.3.3.51	This IE should be included if received via the "INTER RAT HANDOVER INFO", the "RRC CONNECTION REQUEST", the IE "SRNS RELOCATION INFO" or the "Inter RAT Handover Info with Inter RAT Capabilities"
>UE Specific Behaviour Information 1 interRAT	OP		UE Specific Behaviour Information 1 interRAT 10.3.3.52	This IE should be included if received via the "INTER RAT HANDOVER INFO", the "RRC CONNECTION REQUEST", the IE "SRNS RELOCATION INFO" or the "Inter RAT Handover Info with Inter RAT Capabilities"
Other Information elements				
>UE system specific capability	OP	1 to <maxSystemCapability>		
>>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	
UTRAN Mobility Information elements				
>URA Identifier	OP		URA identity 10.3.2.6	
CN Information Elements				
>CN common GSM-MAP NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
>CN domain related information	OP	1 to <MaxCNdomains>		CN related information to be provided for each CN domain
>>CN domain identity	MP			
>>CN domain specific GSM-MAP NAS system info	MP		NAS system information (GSM-MAP) 10.3.1.9	
>>CN domain specific DRX cycle length coefficient	MP		CN domain specific DRX cycle length coefficient, 10.3.3.6	
Measurement Related Information elements				
>For each ongoing measurement reporting	OP	1 to <MaxNoOfMeas>		
>>Measurement Identity	MP		Measuremen	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			t identity 10.3.7.48	
>>Measurement Command	MP		Measurement command 10.3.7.46	
>>Measurement Type	CV-*Setup*		Measurement type 10.3.7.50	
>>Measurement Reporting Mode	OP		Measurement reporting mode 10.3.7.49	
>>Additional Measurements list	OP		Additional measurements list 10.3.7.1	
>>CHOICE *Measurement*	OP			
>>>Intra-frequency				
>>>>Intra-frequency cell info	OP		Intra-frequency cell info list 10.3.7.33	
>>>>Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
>>>>Intra-frequency reporting quantity	OP		Intra-frequency reporting quantity 10.3.7.41	
>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>CHOICE *report criteria*	OP			
>>>>>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>No reporting			NULL	
>>>Inter-frequency				
>>>>Inter-frequency cell info	OP		Inter-frequency cell info list 10.3.7.13	
>>>>Inter-frequency measurement quantity	OP		Inter-frequency measurement quantity 10.3.7.18	
>>>>Inter-frequency reporting quantity	OP		Inter-frequency reporting quantity 10.3.7.21	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>CHOICE *report criteria*	OP			
>>>>>Inter-frequency measurement reporting criteria			Inter-frequency measurement reporting criteria 10.3.7.19	
>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>No reporting			NULL	
>>>Inter-RAT				
>>>>Inter-RAT cell info	OP		Inter-RAT cell info list 10.3.7.23	
>>>>Inter-RAT measurement quantity	OP		Inter-RAT measurement quantity 10.3.7.29	
>>>>Inter-RAT reporting quantity	OP		Inter-RAT reporting quantity 10.3.7.32	
>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>CHOICE *report criteria*	OP			
>>>>>Inter-RAT measurement reporting criteria			Inter-RAT measurement reporting criteria 10.3.7.30	
>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>No reporting			NULL	
>>>Traffic Volume				
>>>>Traffic volume measurement Object	OP		Traffic volume measurement object 10.3.7.70	
>>>>Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
>>>>Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
>>>>CHOICE *report criteria*	OP			
>>>>>Traffic volume			Traffic	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
measurement reporting criteria			volume measurement reporting criteria 10.3.7.72	
>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>No reporting			NULL	
>>>Quality				
>>>>Quality measurement Object	OP		Quality measurement object	
>>>>CHOICE *report criteria*	OP			
>>>>>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.58	
>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>No reporting			NULL	
>>>UE internal				
>>>>UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.79	
>>>>UE internal reporting quantity	OP		UE internal reporting quantity 10.3.7.82	
>>>>CHOICE *report criteria*	OP			
>>>>>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.80	
>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>No reporting			NULL	
>>>UE positioning				
>>>>LCS reporting quantity	OP		LCS reporting quantity 10.3.7.111	
>>>>CHOICE *report criteria*	OP			
>>>>>LCS reporting criteria			LCS reporting criteria 10.3.7.110	
>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>No reporting				
Radio Bearer Information Elements				
>Predefined configuration status information	OP		Predefined configuration status	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			information 10.3.4.5a	
>Signalling RB information list	MP	1 to <maxSRBsetup>		For each signalling radio bearer
>>Signalling RB information	MP		Signalling RB information to setup 10.3.4.24	
>RAB information list	OP	1 to <maxRABsetup>		Information for each RAB
>>RAB information	MP		RAB information to setup 10.3.4.10	
Transport Channel Information Elements				
Uplink transport channels				
>UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
>UL transport channel information list	OP	1 to <MaxTrCH>		
>>UL transport channel information	MP		Added or reconfigured UL TrCH information 10.3.5.2	
>CHOICE *mode*	OP			
>>FDD				
>>>CPCH set ID	OP		CPCH set ID 10.3.5.5	
>>>Transport channel information for DRAC list	OP	1 to <MaxTrCH>		
>>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>>TDD				(no data)
Downlink transport channels				
>DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
>DL transport channel information list	OP	1 to <MaxTrCH>		
>>DL transport channel information	MP		Added or reconfigured DL TrCH information 10.3.5.1	
>Measurement report	OP		MEASUREMENT REPORT	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			10.2.17	
Other Information elements				
Failure cause	OP		Failure cause 10.3.3.13	Diagnostics information related to an earlier SRNC Relocation request (see NOTE 2 in 14.12.0a)
Protocol error information	CV-*ProtErr*		Protocol error information 10.3.8.12	

Multi Bound	Explanation
MaxNoOfMeas	Maximum number of active measurements, upper limit 16

Condition	Explanation
Setup	The IE is mandatory present when the IE Measurement command has the value "Setup", otherwise the IE is not needed.
Ciphering	The IE is mandatory present when the IE Ciphering Status has the value "started" and the ciphering counters need not be reinitialised, otherwise the IE is not needed.
IP	The IE is mandatory present when the IE Integrity protection status has the value "started" and the integrity protection counters need not be reinitialised, otherwise the IE is not needed.
ProtErr	This IE is mandatory present if the IE "Protocol error indicator" is included and has the value "TRUE". Otherwise it is not needed.
SRB1	The IE is mandatory present for RB1. Otherwise it is not needed.

14.12.4.3 Void

14.12.4.4 RFC 3095 CONTEXT INFO

This RRC message is sent between network nodes in SRNS relocation. It is used to transfer the compressor and decompressor context information of the RFC 3095 protocol.

Direction: source RNC →target RNC

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
RFC 3095 context	MP	1 to <maxRBallRABs>			REL-5
>RB identity	MP		RB identity 10.3.4.16		REL-5
>RFC 3095 context list	MP	1 to <maxRFC3095-CID>			REL-5
>>Downlink RFC 3095 context	OP				REL-5
>>>Downlink RFC 3095 context identity	MP		Integer (0..16383)		REL-5
>>>DL_MODE	MP		Enumerated (u, o, r)	RFC 3095 mode in downlink before SRNS relocation.	REL-5
>>>REF_IR	MP		Octet string (1..3000)	The RTP IR header (see section 5.7.7 of RFC3095 for detailed format) corresponding to the oldest header in the compressor sliding window.	REL-5
>>>REF_TIME	OP		Integer (0..4294967295)	Arrival time (at the compressor) of REF_IR in milliseconds. See sections 4.5.4 and 6.5.1 of RFC3095.	REL-5
>>>CURR_TIME	OP		Integer (0..4294967295)	Current time in milliseconds. See section 6.5.1 of RFC3095.	REL-5
>>>SYN_OFFSET_ID	OP		Integer (0..65535)	Last synchronized offset of IP-ID. See section 4.5.5 and 6.5.1 of RFC3095 (termed "Offset_I"). It is related to the compression and decompression of IP-ID and is the synchronized offset between the IP-ID value and the SN value (in the same header) during the last SO state before the relocation procedure.	REL-5
>>>SYN_SLOPE_TS	OP		Integer (0..4294967295)	Last synchronized slope of TS. See sections 5.5.1.2 and 5.7 of RFC3095. In SO state, TS(n) = TS(m) + (n-m) * SYN_SLOPE_TS, where n and m are, the RTP SN of the current and	REL-5

				the reference packet, respectively. The unit of SYN_SLOPE_TS depends on whether TS is scaled before compression or not.	
>>>DYN_CHANGED	MP		Boolean	Information whether dynamic fields other than RTP SN, RTP TS and IP-ID have changed in the headers that are stored in the sliding window. Set to TRUE if changed and FALSE if not changed.	REL-5
>>Uplink RFC 3095 context	OP				REL-5
>>>Uplink RFC 3095 context identity	MP		Integer (0..16383)		REL-5
>>>UL_MODE	MP		Enumerated (u, o, r)	RFC 3095 mode in uplink	REL-5
>>>REF_IR	MP		Octet string (1..3000)	The RTP IR header (see section 5.7.7 of IETF RFC3095 for detailed format) corresponding to the last correctly decompressed header.	REL-5
>>>REF_TIME	OP		Integer (0..4294967295)	Arrival time (at the decompressor) of REF_IR in milliseconds. See sectionss 4.5.4 and 6.5.1 of RFC3095.	REL-5
>>>CURR_TIME	OP		Integer (0..4294967295)	Current time in milliseconds. See section 6.5.1 of RFC3095.	REL-5
>>>SYN_OFFSET_ID	OP		Integer (0..65535)	Last synchronized offset of IP-ID. See sectionss 4.5.5 and 6.5.1 of RFC3095 (termed"Offset_I") . It is related to the compression and decompression of IP-ID and is the synchronized offset between the IP-ID value and the SN value (in the same header) during the last SO state before the relocation	REL-5

				procedure.	
>>>SYN_SLOPE_TS	OP		Integer (0..4294967295)	Last synchronized slope of TS. See sectionss 5.5.1.2 and 5.7 of RFC3095. In SO state, TS(n) = TS(m) + (n-m) * SYN_SLOPE_TS, where n and m are, the RTP SN of the current and the reference packet, respectively. The unit of SYN_SLOPE_TS depends on whether TS is scaled before compression or not.	REL-5
>>>REF_SN_1	OP		Integer (0..65535)	Corresponds to the RTP Sequence Number of the predecessor of the latest RTP packet. This could be used to perform local repair of context by decompressor in U or O mode (see “ref - 1” in section5.3.2.2.5 in IETF RFC3095 for further explanation).	REL-5

3GPP TSG-RAN-WG2 Meeting #37 **R2-031948**
Budapest, Hungary, 25th – 29th August, 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2040** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

*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:	⌘	Updated references to the RRC State Indicator IE
Source:	⌘	RAN WG2
Work item code:	⌘	TEI5
Date:	⌘	10/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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:	⌘	In some places, the RRC state indicator IE is referenced to the void chapter 10.3.3.10, while the IE is defined in 10.3.3.35a This error is already corrected in 25.331-3f0 and 25.331-4a0
Summary of change:	⌘	The wrong reference (10.3.3.10) is replaced by the correct one (10.3.3.35a).
Consequences if not approved:	⌘	Correctness of the specification is compromised.

Clauses affected:	⌘	10.2.8, 10.2.22, 10.2.27, 10.2.30, 10.2.33, 10.2.50, 10.2.61

Other specs affected:	⌘	Y	N		⌘
		☐	☐	Other core specifications	
		☐	☐	Test specifications	
		☐	☐	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.

[…]

10.2.8 CELL UPDATE CONFIRM

This message confirms the cell update procedure and can be used to reallocate new RNTI information for the UE valid in the new cell.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
U-RNTI	CV-*CCCH*		U-RNTI 10.3.3.47		
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm.	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a		
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.~~10~~35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
RLC re-establish indicator (RB2, RB3 and RB4)	MP		RLC re-establish indicator 10.3.3.35		
RLC re-establish indicator (RB5 and upwards)	MP		RLC re-establish		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			indicator 10.3.3.35		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN Information Elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
RB information to release list	OP	1 to <maxRB>			
>RB information to release	MP		RB information to release 10.3.4.19		
RB information to reconfigure list	OP	1 to <maxRB>			
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
Added or Reconfigured TrCH	OP	1 to			

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
information list		<maxTrCH>			
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2		
CHOICE *mode*	MP				
>FDD					
>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>TDD				(no data)	
Downlink transport channels					
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88.		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
CHOICE *mode*	MP				
>FDD					
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>TDD				(no data)	
Downlink HS-PDSCH Information	OP		Downlink HS_PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

Condition	Explanation
CCCH	This IE is mandatory present when CCCH is used and ciphering is not required and not needed otherwise.

[…]

10.2.22 PHYSICAL CHANNEL RECONFIGURATION

This message is used by UTRAN to assign, replace or release a set of physical channels used by a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a		
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.~~10~~35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing value of the maximum allowed UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
>CPCH set ID			CPCH set ID 10.3.5.3		
Downlink radio resources					
CHOICE *mode*	MP				
>FDD					
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30		
>TDD				(no data)	
Downlink HS-PDSCH Information	OP		Downlink HS_PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

[…]

10.2.27 RADIO BEARER RECONFIGURATION

This message is sent from UTRAN to reconfigure parameters related to a change of QoS. This procedure can also change the multiplexing of MAC, reconfigure transport channels and physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a		
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.~~10~~35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN information elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
RAB information to reconfigure list	OP	1 to < maxRABsetup >			
>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11		
RB information to reconfigure list	MP	1to <maxRB>		Although this IE is not always required, need is MP to align with ASN.1	
	OP				REL-4
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.4.17		
RB with PDCP context relocation info list	OP	1 to <maxRBallRABs>		This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
>RB identity	MP		RB identity 10.3.4.16		REL-5
>PDCP context relocation info	MP		PDCP context relocation info 10.3.4.1a		REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2		
CHOICE *mode*	OP				
>FDD					
>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>TDD				(no data)	
Downlink transport channels					
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH	OP	1 to			

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
information list		<maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
CHOICE *mode*	MP				
>FDD					
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30		
>TDD				(no data)	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	MP	1 to <maxRL>		Although this IE is not always required, need is MP to align with ASN.1	
	OP				REL-4
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

[…]

10.2.30 RADIO BEARER RELEASE

This message is used by UTRAN to release a radio bearer. It can also include modifications to the configurations of transport channels and/or physical channels. It can simultaneously indicate release of a signalling connection when UE is connected to more than one CN domain.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a		
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.~~10~~35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
Signalling Connection release indication	OP		CN domain identity 10.3.1.1		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB Information Elements					
RAB information to reconfigure list	OP	1 to < maxRABsetup >			
>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11		
RB information to release list	MP	1 to <maxRB>			
>RB information to release	MP		RB information to release 10.3.4.19		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigure		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			d UL TrCH information 10.3.5.2		
CHOICE *mode*	OP				
>FDD					
>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>TDD				(no data)	
Downlink transport channels					
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
CHOICE *mode*	MP				
>FDD					
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30		
>TDD				(no data)	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information		REL-5

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.6.23a		
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

[…]

10.2.33 RADIO BEARER SETUP

This message is sent by UTRAN to the UE to establish new radio bearer(s). It can also include modifications to the configurations of transport channels and/or physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.3.9a		
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.~~10~~35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB Information Elements					
Signalling RB information to setup list	OP	1 to <maxSRBsetup>		For each signalling radio bearer established	
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24		
RAB information to setup list	OP	1 to <maxRABsetup>		For each RAB established	
>RAB information for setup	MP		RAB information for setup 10.3.4.10		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2		
CHOICE *mode*	OP				
>FDD					
>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>TDD				(no data)	
Downlink transport channels					
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels10.3.5.6		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
CHOICE *mode*	MP				
>FDD					
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30		
>TDD				(no data)	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

[…]

10.2.50 TRANSPORT CHANNEL RECONFIGURATION

This message is used by UTRAN to configure the transport channel of a UE. This also includes a possible reconfiguration of physical channels. The message can also be used to assign a TFC subset and reconfigure physical channel.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering	The UTRAN	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			mode info 10.3.3.5	should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a		
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.~~10~~35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigure		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			d UL TrCH information 10.3.5.2		
CHOICE *mode*	OP				
>FDD					
>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>TDD				(no data)	
Downlink transport channels					
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
CHOICE *mode*	MP				
>FDD					
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30		
>TDD				(no data)	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio	OP	1 to		Send downlink	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
link list		<maxRL>		information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

[…]

10.2.61 URA UPDATE CONFIRM

This message confirms the URA update procedure and can be used to reallocate new RNTI information for the UE valid after the URA update.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE information elements					
U-RNTI	CV-*CCCH*		U-RNTI 10.3.3.47		
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
RRC State Indicator	MP		RRC State Indicator 10.3.3.~~10~~35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5

Condition	Explanation
CCCH	This IE is mandatory present when CCCH is used and not needed otherwise.

[…]

3GPP TSG-RAN2 Meeting #37
Budapest, Hungary, 25-29 August 2003

Tdoc R2-031950

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2041** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

*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 [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Corrections to Event 1D
Source:	⌘	RAN WG2
Work item code:	⌘	TEI5
Date:	⌘	28/08/2003
Category:	⌘	**C**
Release:	⌘	Rel-5

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:	⌘	The 1D description is perhaps incomplete / suboptimal. It is the purpose of this event to aid the RNC's keeping track of the best cell in the UE's active set. However, from the moment that this measurement is configured until the event 1D is triggered for the first time, th best cell in the active set is not necessarily known in the RNC. When 1D is configured, the RNC needs to be notified immediately of the best cell in the active set.
Summary of change:	⌘	In the current version of the specification, the UE is required to evaluate and store the best cell in the active set in the TRIGGERED_1D_EVENT variable, as soon as an event 1D measurement is configured. The change requested is that the UE, upon evaluating and storing the best cell in the active set in its variable, triggers a measurement report for event 1D to report this cell to the RNC.
Consequences if not approved:	⌘	Other means may need to be found by the RNC to compensate for lack of this immediate report from the UE (e.g. from the moment of establishing an RRC connection, even if tracking of the best cell is not yet required). The 1D definition remains incomplete, the RNC complexity and overhead are increased unnecessarily.

Clauses affected:	⌘	

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

Other comments:	⌘	An example that demonstrates the need for this change, is the scenario where the RNC decides to establish HS-DSCH resources for the UE for the first time. At that point, the RNC may configure the 1D measurement in order to track changes to the best cell in the active set and aid decisions on changing the serving HSDPA cell. More importantly, at the moment when initial HS-DSCH establishment is to be performed and the UE has more than one cells in the active set, it is important that the RNC knows which is the best cell in the UE's active set (I order to decide in which cel to establish HS-DSCH resources first). The most efficient way to achieve this is by using the initial configuration of the 1D measurement to trigger a report of the current best cell in the active set.

14.1.2.4 Reporting event 1D: Change of best cell

When an intra-frequency measurement configuring event 1d is set up, the UE shall:

1> create a variable TRIGGERED_1D_EVENT related to that measurement, which shall initially contain the best cell in the active set when the measurement is initiated;

1> delete this variable when the measurement is released.

1> As soon as the best cell in the active set has been evaluated by the UE (and stored in the TRIGGERED_1D_EVENT variable) and provided that there is more than one cell in the active set, the UE shall trigger an immediate measurement report with IEs set as below:

2> set in "intra-frequency measurement event results"; "Intrafrequency event identity" to "1d" and "cell measurement event results" to the CPICH info of the primary CPICH stored in the TRIGGERED_1D_EVENT variable.

2> set the IE "measured results" and the IE "additional measured results" according to subclause 8.4.2

When event 1D is configured in the UE, the UE shall:

1> if IE "useCIO" is present and its value is TRUE, take into account the Cell Individual Offset for evaluation of the Equation 1 and 2, otherwise do not take it into account.

1> if "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH that is not stored in "Best cell" in variable BEST_CELL_1D_EVENT, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH that is not stored in "Best cell" in variable BEST_CELL_1D_EVENT:

NOTE: If the equations are simultaneously fulfilled for more than one primary CPICH, the UE should report only one event 1D, triggered by the best primary CPICH.

2> if all required reporting quantities are available for that cell, and if the equations have been fulfilled for a time period indicated by "Time to trigger" and if IE "Triggering condition 2" is absent or if it is present and that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 2":

3> set "best cell" in the variable BEST_CELL_1D_EVENT to that primary CPICH that triggered the event;

3> send a measurement report with IEs set as below:

4> set in "intra-frequency measurement event results"; "Intrafrequency event identity" to "1d" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report.

4> set the IE "measured results" and the IE "additional measured results" according to subclause 8.4.2.

This event is only applicable to the CELL_DCH state. Upon transition to CELL_DCH the UE shall:

1> set "best cell" in the variable BEST_CELL_1D_EVENT to the best cell of the primary CPICHs included in the active set.

Equation 1 (Triggering condition for pathloss)

$$10 Log M_{NotBest} + CIO_{NotBest} \leq 10 Log M_{Best} + CIO_{Best} - H_{1d}/2,$$

Equation 2 (Triggering condition for all the other measurement quantities)

$$10 Log M_{NotBest} + CIO_{NotBest} \geq 10 Log M_{Best} + CIO_{Best} + H_{1d}/2,$$

The variables in the formula are defined as follows:

$M_{NotBest}$ is the measurement result of a cell not stored in "best cell" in the variable BEST_CELL_1D_EVENT.

$CIO_{NotBest}$ is the cell individual offset of a cell not stored in "best cell" in the variable BEST_CELL_1D_EVENT.

M_{Best} is the measurement result of the cell stored in "best cell" in variable BEST_CELL_1D_EVENT.

CIO_{Best} is the cell individual offset of a cell stored in "best cell" in the variable BEST_CELL_1D_EVENT.

H_{1d} is the hysteresis parameter for the event 1d.

If the measurement results are pathloss or CPICH-Ec/No then $M_{Not\ Best}$ and M_{Best} are expressed as ratios.

If the measurement result is CPICH-RSCP then $M_{Not\ Best}$ and M_{Best} are expressed in mW.

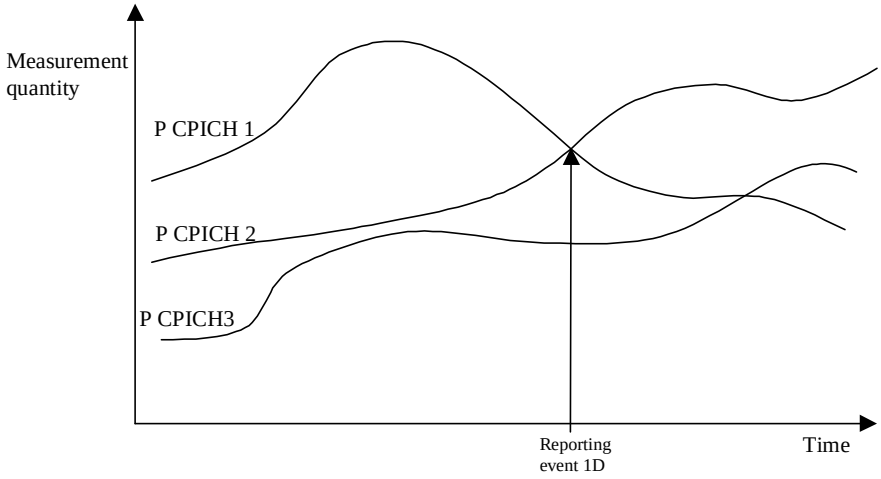

Figure 14.1.2.4-1 [Informative]: A primary CPICH becomes better than the previously best primary CPICH

In this figure, the parameters hysteresis and time to trigger, as well as the cell individual offsets for all cells are equal to 0.