TSG-RAN Meeting #10 *RP-000571*
Bangkok, Thailand, 6 - 8 December 2000

Title: **Agreed CRs to TS 25.331 (2)**

Source: **TSG-RAN WG2**

Agenda item: **5.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Subject	Cat	Version	Versio
R2-002121	agreed	25.331	566	1	Number of RLs that can be removed in Active Set update	F	3.4.1	3.5.0
R2-002090	agreed	25.331	568	1	Clarification on Segment Index	F	3.4.1	3.5.0
R2-002445	agreed	25.331	571	3	RRC procedure performance requirements	F	3.4.1	3.5.0
R2-002117	agreed	25.331	572	1	Correction of newInterSystemCellList and MeasurementControlSysInfo in ASN.1	F	3.4.1	3.5.0
R2-002427	agreed	25.331	573	4	Removal of Flow Id concept while maintaining Iu interface flexibility	F	3.4.1	3.5.0
R2-002341	agreed	25.331	574	2	Ciphering and reset	F	3.4.1	3.5.0
R2-002268	agreed	25.331	575	1	Corrections and clarifications concerning inter-RAT change procedures	F	3.4.1	3.5.0
R2-002132	agreed	25.331	576	1	General Security Clarifications	F	3.4.1	3.5.0
R2-002198	agreed	25.331	577		Clarification on RB 0	F	3.4.1	3.5.0
R2-002199	agreed	25.331	578		Clarification on the transition of RRC state	F	3.4.1	3.5.0
R2-002346	agreed	25.331	580	1	UP measurements for RRC information to target RNC	F	3.4.1	3.5.0
R2-002202	agreed	25.331	581		Correction on LCS reporting criteria	F	3.4.1	3.5.0
R2-002354	agreed	25.331	584	1	Clarification to handling of satellite health issues	F	3.4.1	3.5.0
R2-002218	agreed	25.331	585		Clarification on activation time	F	3.4.1	3.5.0
R2-002219	agreed	25.331	586		Clarification on activation time for ciphering in TM	F	3.4.1	3.5.0
R2-002476	agreed	25.331	587	2	Measurement procedures and messages	F	3.4.1	3.5.0
R2-002446	agreed	25.331	590	1	Inter-RAT UE radio access capability	F	3.4.1	3.5.0
R2-002435	agreed	25.331	592	1	Clarification on cell update/URA update procedures	F	3.4.1	3.5.0
R2-002455	agreed	25.331	595	4	Protocol States and Process	F	3.4.1	3.5.0
R2-002392	agreed	25.331	596	1	System Information	F	3.4.1	3.5.0

3GPP-RAN-WG2 Meeting #16
Beijing, China, 9-13 September 2000

Document **R2-002121**

e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.331	CR	566r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [X] ME [ ] UTRAN / Radio [X] Core Network [ ]
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 9th Sept. 2000

Subject: Number of RLs that can be removed in Active Set Update

Work item:

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Since there is no restriction to remove all RLs in active set when there are less than MaxRL (=8) in active set, removing all the RL by Active Set Update should be allowed.

Clauses affected: 10.2.1, 11.3.6

Other specs Affected:	Other 3G core specifications		→	List of CRs:
	Other GSM core specifications		→	List of CRs:
	MS test specifications		→	List of CRs:
	BSS test specifications		→	List of CRs:
	O&M specifications		→	List of CRs:

Other comments:

help.doc

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10.2.1 ACTIVE SET UPDATE

NOTE: Only for FDD.

This message is used by UTRAN to add, replace or delete radio links in the active set of the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.14	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.17	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now".
New U-RNTI	OP		U-RNTI 10.3.3.45	
CN information elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB information elements				
RB with PDCP information list	OP	1 to <maxRBallRABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
Phy CH information elements				
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.38	Default value is the existing "maximum UL TX power.
Downlink radio resources				
Radio link addition information	OP	1 to <maxRL-1>		Radio link addition information required for each RL to add
>Radio link addition information	MP		Radio link addition information 10.3.6.67	
Radio link removal information	OP	1 to <maxRL~~-1~~>		Radio link removal information required for each RL to remove
> Radio link removal information	MP		Radio link removal information 10.3.6.68	
TX Diversity Mode	MD		TX Diversity Mode 10.3.6.84	Default value is the existing TX diversity mode.
SSDT information	OP		SSDT information 10.3.6.76	

11.3.6 Physical channel information elements

```
RL-AdditionInformationList ::=      SEQUENCE (SIZE (1..maxRL-1)) OF
                                        RL-AdditionInformation
```

Document R2-002090

3GPP-RAN-WG2 Meeting #16
Beijing, China, 9-13 September 2000

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CHANGE REQUEST

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25.331	CR	568r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [X] ME [X] UTRAN / Radio [X] Core Network [ ]
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 9th Sept. 2000

Subject: Clarification on Segment Index

Work item:

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: In the semantics description of Segment Index, it is unclear whether "the first part" refers to First Segment, or the first Subsequent Segment/Last Segment after First Segment. It is clarified that Segment Index=0 is used for the later case. The range of segment Index is modified also, since the maximum value, 15, will never be used.

Clauses affected: 10.3.8.14, 11.3.8

Other specs Affected:	Other 3G core specifications		→	List of CRs:
	Other GSM core specifications		→	List of CRs:
	MS test specifications		→	List of CRs:
	BSS test specifications		→	List of CRs:
	O&M specifications		→	List of CRs:

Other comments:


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10.3.8.14 Segment index

Each system information segment has an individual segment index.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Segment index	MP		Integer (0..~~15~~14)	Segments of a system information block are numbered starting with 0 for the ~~first part.~~ first Subsequent Segment/Last Segment after First Segment.

11.3.8 Other information elements

```
SegmentIndex ::=                    INTEGER (0..~~15~~14)
```

3GPP TSG RAN WG2 Meeting #17
Sophia Antipolis, France, 13-17 November 2000

***Document* R2-002445**
e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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25.331	CR	571r3	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2	**Date:** 17.11.2000
Subject:	RRC Procedure Performance Requirements	
Work item:		

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:
No performance requirements have been defined for UE execution of RRC Procedures until now. This change request sets limits for the maximum processing time of the UE in those procedures, where the maximum time depends only on UE internal processing and not e.g. physical layer synchronization, which is within the scope of RAN WG4.

Revision 3: Modifications to N2 values, response messages separated to different cases.

Clauses affected: 2, 8.2.5.3, New section 13.x to be appended to the end of chapter 13

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

<--------- double-click here for help and instructions on how to create a CR.

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.

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

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

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

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

[5] 3G TS 24.008: "Mobile radio interface layer 3 specification, Core Network Protocols - Stage 3".

[6] 3G TS 25.103: "RF Parameters in Support of RRM".

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

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

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

[10] 3G TS 25.402: "Synchronisation in UTRAN, stage 2".

[11] 3G 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] 3G TR 25.921: "Guidelines and Principles for protocol description and error handling".

[15] 3G TS 25.321: "MAC protocol specification".

[16] 3G TS 25.322: "RLC Protocol Specification".

[17] 3G TS 24.007: "Mobile radio interface signalling layer 3".

[18] 3G TS 25.305: "Stage 2 Functional Specification of Location Services 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)"

8.2.5 Transport format combination control

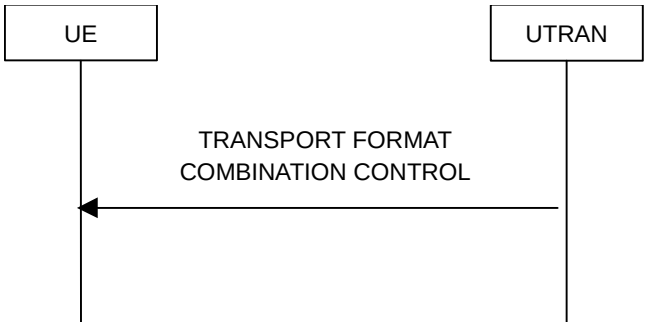

Figure 33: Transport format combination control, normal flow

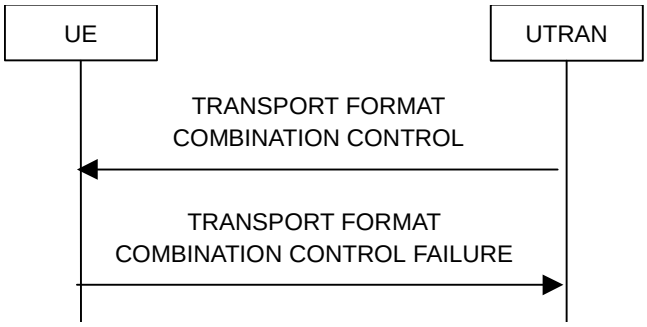

Figure 34: Transport format combination control, failure case

8.2.5.1 General

The transport format combination control procedure is used to control the allowed uplink transport format combinations within the transport format combination set.

8.2.5.2 Initiation

The UTRAN shall transmit the TRANSPORT FORMAT COMBINATION CONTROL message on the downlink DCCH using AM, UM or TM RLC. When not stated otherwise elsewhere, the UE may initiate the transport format combination control procedure also when another procedure is ongoing, and in that case the state of the latter procedure shall not be affected.

UTRAN should not initiate a transport format combination control procedure, while awaiting the completion of the following procedures:

- Radio bearer establishment (subclause 8.2.1);
- Radio bearer release (subclause 8.2.3);
- Radio bearer reconfiguration (subclause 8.2.2);
- Transport channel reconfiguration (subclause 8.2.4);
- Physical channel reconfiguration (subclause 8.2.6).

To change the sub-set of allowed transport format combinations, the UTRAN shall:

- set the allowed TFCs in the IE "TFC subset". The network can optionally specify the duration for which a new TFC sub-set applies by using the IE "TFC Control duration".

To remove completely the previous restrictions of allowed transport format combinations, the UTRAN shall:

- set the "full transport format combination" in the IE "TFC subset".

8.2.5.3 Reception of a TRANSPORT FORMAT COMBINATION CONTROL message by the UE

Upon reception of the TRANSPORT FORMAT COMBINATION CONTROL message, and if the variable ORDERED_CONFIG is not set the UE shall:

- determine whether the IE "TFC Control duration" is included;
- if the IE "TFC Control duration" is not included:
  - store the newly specified TFC (sub)set in the variable to be called 'default TFC (sub)set';
  - configure the allowed transport format combinations as defined in subclause 8.6.5.3;
- if the IE "TFC Control duration" is included in the message:
  - apply the specified TFC set or sub-set for the number of (10 ms) frames specified in the IE "TFC Control duration".
  - if no further TFC Control messages are received during this interval the UE shall:
    - at the end of the defined period change the TFC (sub)set back to the 'default TFC (sub)set';
  - if further TFC Control messages are received during the 'TFC Control duration' period:
    - re-configure itself in accordance with the TFC (sub)set defined in the most recently received message.

~~In all cases, the TFC set or TFC sub-set specified in the message shall be used in:~~

- ~~Frame n+5, when frame n+5 also corresponds to the first 10 ms frame following the framing boundary between transport blocks with the largest TTI which are configured on the uplink CCTrCH; n is the downlink DPCH frame (with 10 ms resolution) during which the UE received the complete RRC "Transport Format Combination Control" message,~~
- ~~Or if the above condition is not met, the first 10 ms frame following the first framing boundary after frame n+5, where the framing boundary is that between the transport blocks with the largest TTI which are configured on the uplink CCTrCH.~~

8.2.5.4 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set because of any message other than TRANSPORT FORMAT COMBINATION CONTROL, the UE shall:

- keep the TFC subset existing before the TRANSPORT FORMAT COMBINATION CONTROL message was received;
- transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC;
- set the IE "failure cause" to "incompatible simultaneous reconfiguration";
- when the successful delivery of TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been confirmed by RLC the procedure ends.

8.2.5.5 Invalid TRANSPORT FORMAT COMBINATION CONTROL message

If the variable ORDERED_CONFIG is not set and the TRANSPORT FORMAT COMBINATION CONTROL message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the uplink DCCH using AM RLC;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- when the successful delivery of the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been confirmed by RLC:
  - resume data transmission on RB 3 and upwards if RLC-AM or RLC-UM is used on those radio bearers;
  - resume normal operation as if the invalid TRANSPORT FORMAT COMBINATION CONTROL message has not been received and the procedure ends.

13.x UE RRC Procedure Performance

This section defines the performance requirements related to RRC procedures in the UE. Where the total delay is impacted by processing of variable length on the physical layer (e.g. physical layer synchronisation), references to ~~RAN WG4~~appropriate specifications are given.

13.x.1 Definitions

The following definitions of N1 and N2 are valid only for this UE RRC Procedure Performance specification.

N1 = upper limit on the time required to execute modifications in UE after the reception of a UTRAN -> UE message has been completed. Where applicable (e.g. the physical layer transmission is impacted), the changes shall be adopted in the beginning of the next TTI starting after N1. N1 is specified as a multiple of 10 ms.

N2 = number of 10 ms radio frames from end of reception of UTRAN -> UE message on UE physical layer before the transmission of the UE -> UTRAN response message must be ready to start on a transport channel with no access delay other than the TTI alignment (e.g. DCH, therefore excluding delays caused by RACH procedure etc). The UE response message transmission from the physical layer shall begin at the latest (N2*10)+TTI ms after completion of the reception of the last TTI carrying the triggering UTRAN -> UE message.

N1 and N2 are independent (e.g. N2-N1 is not restricted to being less than or equal to 10ms).

13.x.2 RRC procedure performance values

Note: Times indicated in the table do not include cell reselection ~~or immediate cell evaluation~~.

Procedure title:	UTRAN -> UE	UE -> UTRAN	N1	N2	Notes
RRC Connection Management Procedures					
Broadcast of system information	SYSTEM INFORMATION				N2 is not applicable for any system information messages, because there is no response message from the UE.
Master Information Block	SYSTEM INFORMATION		5	NA	No system information data shall be lost due to processing of a MIB received with no detectable errors. This means that the UE shall buffer all system information data received after the MIB until the data can be processed according to the information in the MIB, unless the MIB was received erroneously.
System Information Block type 1	SYSTEM INFORMATION		10	NA	
System Information Block type 2	SYSTEM INFORMATION		10	NA	
System Information Block type 3	SYSTEM INFORMATION		10	NA	
System Information Block type 4	SYSTEM INFORMATION		10	NA	
System Information Block type 5	SYSTEM INFORMATION		10	NA	
System Information Block type 6	SYSTEM INFORMATION		10	NA	
System Information Block type 7	SYSTEM INFORMATION		5	NA	
System Information Block type 8	SYSTEM INFORMATION		10	NA	
System Information Block type 9	SYSTEM INFORMATION		5	NA	
System Information Block type 10	SYSTEM INFORMATION		5	NA	
System Information Block type 11	SYSTEM INFORMATION		10	NA	
System Information Block type 12	SYSTEM INFORMATION		10	NA	
System Information Block type 13	SYSTEM INFORMATION		10	NA	
System Information Block type 14	SYSTEM INFORMATION		10	NA	
System Information Block type 15	SYSTEM INFORMATION		10	NA	
System Information Block type 16	SYSTEM INFORMATION		10	NA	
RRC connection establishment *Dedicated channel*	RRC CONNECTION SETUP	RRC CONNECTION SETUP COMPLETE	10	NA	N1 measures time to the start of tx / rx on DPCH. N2 cannot be specified, because RRC CONNECTION SETUP COMPLETE message is transmitted only after physical layer synchronisation, which also depends on the Node B. The performance of the physical layer synchronisation procedure is specified ~~by RAN WG4~~ in ~~TS 25.133 (FDD)~~[19] and ~~TS 25.123 (TDD)~~[20]
RRC connection establishment *Common channel*	RRC CONNECTION SETUP	RRC CONNECTION SETUP COMPLETE	10	11	N1 and N2 applicable as defined (N2 can be tested from the initiation of the power ramp on RACH).

RRC connection release *Dedicated channel*	RRC CONNECTION RELEASE	RRC CONNECTION RELEASE COMPLETE	5	~~6~~8	N1 sets the requirement for the time from the completion of the last repetition of the RRC CONNECTION RELEASE COMPLETE message to the release of the physical channel. N2 sets the requirement from the end of successful reception of the RRC CONNECTION RELEASE message to the start of the first transmission of the RRC CONNECTION RELEASE COMPLETE message.
RRC connection release *Common channel*	RRC CONNECTION RELEASE	RRC CONNECTION RELEASE COMPLETE	NA	11	N1 represents UE internal configuration that cannot be externally observed.
RRC connection re-establishment *Dedicated channel*	RRC CONNECTION RE-ESTABLISHMENT	RRC CONNECTION RE-ESTABLISHMENT COMPLETE	10	NA	N2 cannot be specified, because RRC CONNECTION RE-ESTABLISHMENT COMPLETE message is transmitted only after physical layer synchronisation, which also depends on the Node B.
RRC connection re-establishment *Common channel*	RRC CONNECTION RE-ESTABLISHMENT	RRC CONNECTION RE-ESTABLISHMENT COMPLETE	10	11	N1 and N2 applicable as defined (N2 can be tested from the initiation of the preamble power ramp on RACH).
UE capability enquiry	UE CAPABILITY ENQUIRY	UE CAPABILITY ENQUIRY INFORMATION	NA	~~6~~8	N1 is not applicable because the UE configuration does not change.
Security mode control	SECURITY MODE COMMAND	SECURITY MODE COMPLETE	5	~~6~~8	
Signalling flow release procedure	SIGNALLING FLOW RELEASE		5	NA	N2 is not applicable because there is no response message.
Counter check	COUNTER CHECK	COUNTER CHECK RESPONSE	NA	~~6~~8	N1 is not applicable because the UE configuration does not change.
Radio Bearer control procedures					
Radio bearer establishment *Dedicated channel*	RADIO BEARER SETUP	RADIO BEARER SETUP COMPLETE / FAILURE	10	NA	N2 cannot be specified, because the RADIO BEARER SETUP COMPLETE / FAILURE message is transmitted only after physical layer synchronisation, which depends also on Node B.
Radio bearer establishment *Common channel*	RADIO BEARER SETUP	RADIO BEARER SETUP COMPLETE / FAILURE	10	11	
Radio bearer reconfiguration *Dedicated channel*	RADIO BEARER RECONFIGURATION	RADIO BEARER RECONFIGURATION COMPLETE / FAILURE	10	NA	N2 cannot be specified, because the RADIO BEARER RECONFIGURATION COMPLETE / FAILURE message is transmitted only after physical layer synchronisation, which depends also on Node B.
Radio bearer reconfiguration *Common channel*	RADIO BEARER RECONFIGURATION	RADIO BEARER RECONFIGURATION COMPLETE / FAILURE	10	11	

Radio bearer release	RADIO BEARER RELEASE	RADIO BEARER RELEASE COMPLETE / FAILURE	10	11	
Transport channel reconfiguration *Dedicated channel*	TRANSPORT CHANNEL RECONFIGURATION	TRANSPORT CHANNEL RECONFIGURATION COMPLETE / FAILURE	10	NA	N2 cannot be specified, because the TRANSPORT CHANNEL RECONFIGURATION COMPLETE / FAILURE message is transmitted only after physical layer synchronisation, which depends also on Node B.
Transport channel reconfiguration *Common channel*	TRANSPORT CHANNEL RECONFIGURATION	TRANSPORT CHANNEL RECONFIGURATION COMPLETE / FAILURE	10	11	
Transport format combination control *AM or UM RLC mode*	TRANSPORT FORMAT COMBINATION CONTROL	TRANSPORT FORMAT COMBINATION CONTROL FAILURE	5	~~6~~8	
Transport format combination control *Transparent mode*	TRANSPORT FORMAT COMBINATION CONTROL		5	NA	N2 is not applicable because no response message is defined.
Physical channel reconfiguration *Dedicated channel*	PHYSICAL CHANNEL RECONFIGURATION	PHYSICAL CHANNEL RECONFIGURATION COMPLETE / FAILURE	8	NA	N2 cannot be specified, because the PHYSICAL CHANNEL RECONFIGURATION COMPLETE / FAILURE message is transmitted only after physical layer synchronisation, which depends also on Node B.
Physical channel reconfiguration *Common channel*	PHYSICAL CHANNEL RECONFIGURATION	PHYSICAL CHANNEL RECONFIGURATION COMPLETE / FAILURE	8	9	
Physical Shared Channel Allocation [TDD only]	PHYSICAL SHARED CHANNEL ALLOCATION		5	NA	N2 is not applicable because no response message is defined.
~~Downlink outer loop control~~	~~DOWNLINK OUTER LOOP CONTROL~~		~~NA~~	~~NA~~	~~Downlink outer loop control performance requirements are specified in TS 25.101.~~
Uplink Physical Channel Control [TDD only]	UPLINK PHYSICAL CHANNEL CONTROL		NA	NA	Requirements for outer loop and timing advance adjustments are defined in ~~TS 25.102~~[22] and ~~TS 25.123~~[20].
RRC connection mobility procedures					
Cell update	CELL UPDATE CONFIRM	~~UTRAN MOBILITY INFORMATION CONFIRM / PHYSICAL CHANNEL RECONFIGURATION / TRANSPORT CHANNEL RECONFIGURATION~~	5	~~6~~	

		UTRAN MOBILITY INFORMATION CONFIRM	5	8	
		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	8	9	
		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	10	11	
URA update	URA UPDATE CONFIRM	UTRAN MOBILITY INFORMATION CONFIRM	5	~~6~~8	
UTRAN mobility information	UTRAN MOBILITY INFORMATION	UTRAN MOBILITY INFORMATION CONFIRM / FAILURE	5	~~6~~8	
Active set update	ACTIVE SET UPDATE	ACTIVE SET UPDATE COMPLETE / FAILURE	NA	~~6~~8	The requirements on UE combining and power control performance for both UL and DL are specified by RAN WG4 in ~~TS 25.101~~[21] and ~~TS 25.133~~[19]. Also in case of branch addition the COMPLETE / FAILURE message is transmitted without waiting for the new branch to stabilize, therefore N2 is specified.
Inter-system handover to UTRAN	HANDOVER TO UTRAN COMMAND (other system)	HANDOVER TO UTRAN COMPLETE	NA	NA	The performance of this procedure is specified in 05.10.
Inter-system handover from UTRAN	INTER-SYSTEM HANDOVER COMMAND	INTER-SYSTEM HANDOVER FAILURE	NA	NA	The performance of this procedure is specified in ~~TS 25.133~~[19] and ~~TS 25.123~~[20].
Measurement procedures					
Measurement control	MEASUREMENT CONTROL	MEASUREMENT CONTROL FAILURE	5	~~6~~8	Response to measurement inquiry depends on physical layer measurement. Response time is defined in ~~TS 25.133~~[19] and ~~TS 25.123~~[20]. N1 and N2 only define the processing of the message.

3GPP TSG RAN WG2#16
Beijing, PR China, 9 – 13 October, 2000

Document R2-002117
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.331	CR	572r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** 10/10/2000

Subject: Correction of newInterSystemCellList and MeasurementControlSysInfo in ASN.1

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

1- Addition of IE interSystemCellID in IE newIntersystemCellList :
cells belonging to newInterSystemCellList have no identity number whereas removedInterSystemCellList gives indentity numbers of cells to remove. Alignment with tabular `10.3.7.23`

2- Editorial Error : In IE MeasurementControlSysInfo, HCS information are given in IE HCS-not-used and not in IE HCS-used.

Clauses affected: 11.3.7

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

```
InterSystemCellID ::=               INTEGER (0..maxCellMeas-1)

.
.
.
InterSystemCellInfoList ::=         SEQUENCE {
    removedInterSystemCellList          RemovedInterSystemCellList,
    newInterSystemCellList              NewInterSystemCellList
}

InterSystemCellInfoList-HCS ::=         SEQUENCE {
    removedInterSystemCellList          RemovedInterSystemCellList,
    newInterSystemCellList              NewInterSystemCellList-HCS
}


.
.
.

NewInterSystemCell ::=              SEQUENCE {
    interSystemCellID                       InterSystemCellID               OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            q-Offset                            Q-Offset                    OPTIONAL,
            q-RxlevMin                          Q-RxlevMin,
            maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power,
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPower                     GSM-OutputPower             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare                               NULL
    }
}

NewInterSystemCell-HCS ::=              SEQUENCE {
    interSystemCellID                       InterSystemCellID               OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            q-Offset                            Q-Offset                    OPTIONAL,
            hcs-NeighbouringCellInformation-RSCP        HCS-
NeighbouringCellInformation-RSCP
                                                                            OPTIONAL,
            q-RxlevMin                          Q-RxlevMin,
            maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power,
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPower                     GSM-OutputPower             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare                               NULL
    }
}


.
.
.


RemovedInterSystemCellList ::=      SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        InterSystemCellID


.
.
.
.
.
```

```
MeasurementControlSysInfo ::=       SEQUENCE {
    use-of-HCS                          CHOICE  {
        hcs-not-used                    SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
HCS-RSCP            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
HCS-RSCP            OPTIONAL
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
RSCP            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
RSCP            OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
HCS-ECN0            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
HCS-ECN0            OPTIONAL
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
ECN0            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
ECN0            OPTIONAL
                }
            },
            interSystemMeasurementSysInfo       InterSystemMeasurementSysInfo-HCS       OPTIONAL
        },
        hcs-used                        SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
RSCP            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
RSCP            OPTIONAL
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
HCS-RSCP            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
HCS-RSCP            OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
ECN0            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
ECN0            OPTIONAL
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
HCS-ECN0            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
HCS-ECN0            OPTIONAL
                }
            },
            interSystemMeasurementSysInfo       InterSystemMeasurementSysInfo
    OPTIONAL
        }
    },

    trafficVolumeMeasSysInfo            TrafficVolumeMeasSysInfo            OPTIONAL,
    ue-InternalMeasurementSysInfo       UE-InternalMeasurementSysInfo       OPTIONAL
}
```

TSG-RAN Working Group 2#17
Sophia Antipolis, France, 13 - 17 November 2000

Document R2-002427
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx
Rev of R2-002086

CHANGE REQUEST

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25.331	**CR**	**573r4**	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		*(for SMG use only)*
List expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects:	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 10/11/00

Subject: Removal of Flow Id concept while maintaining Iu interface flexibility

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Dynamic routing based on the flow id is not required to allow considered migration scenarios. Therefore the concept is proposed to be removed and message routing will be performed using the CN domain identity~~.~~, while retaining one field to allow for future flexibility.

Clauses affected: 8.1.4.1, 8.1.4.3, 8.1.8.1, 8.1.8.2, 8.1.8.3, 8.1.10.1, 8.1.10.2, 8.1.10.3, 8.1.13, 8.1.13.1, 8.1.13.2, 8.1.13.3, 8.1.13.4, 8.1.14.1, 8.1.14.2, 8.1.14.3, 10.2.12, 10.2.47, 10.2.48, 10.2.59, 10.3.1.1, 10.3.1.4 ~~(removed)~~, 10.3.10, 11.2, 11.3.1, 11.4

Other specs affected:

Other 3G core specifications		→ List of CRs:	24.008 - CR xxx
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: The following specifications contain references to the signalling flows (flow id): 24.007, 25.401, 34.108

8.1.4 RRC connection release

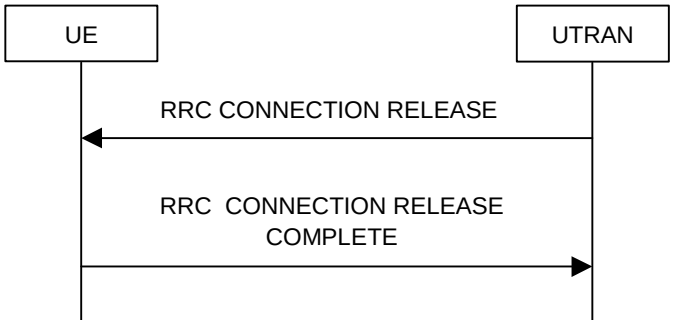

Figure 9: RRC Connection Release procedure on the DCCH

Figure 10: RRC Connection Release procedure on the CCCH

8.1.4.1 General

The purpose of this procedure is to release the RRC connection including the signalling link and all radio bearers between the UE and the UTRAN. By doing so, all established ~~signalling flows and~~ signalling connections will be released.

8.1.4.2 Initiation

When the UE is in state CELL_DCH or CELL_FACH, the UTRAN may at anytime initiate an RRC connection release by transmitting an RRC CONNECTION RELEASE message using UM RLC. When UTRAN transmits an RRC CONNECTION RELEASE message as response to a received RRC CONNECTION RE-ESTABLISHMENT REQUEST (subclause 8.1.5), CELL UPDATE (subclause 8.3.1) or URA UPDATE (subclause 8.3.2) message from the UE, UTRAN should use the downlink CCCH to transmit the message. In all other cases the downlink DCCH should be used, although the downlink CCCH may be used as well.

UTRAN may transmit several RRC CONNECTION RELEASE messages to increase the probability of proper reception of the message by the UE. The number of repeated messages and the interval between the messages is a network option.

8.1.4.3 Reception of an RRC CONNECTION RELEASE message by the UE

The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL_DCH and CELL_FACH. Furthermore this procedure can interrupt any ongoing procedures with the UE in the above listed states.

When the UE receives the first RRC CONNECTION RELEASE message, it shall:

- in state CELL_DCH:
  - initialise the counter V308 with the value of the IE "Number of RRC Message Transmissions", which indicates the number of times the RRC CONNECTION RELEASE COMPLETE message shall be sent;
  - transmit an RRC CONNECTION RELEASE COMPLETE message using UM RLC on the DCCH to the UTRAN;
  - start timer T308.
- in state CELL_FACH and if the RRC CONNECTION RELEASE message was received on the DCCH

- transmit an RRC CONNECTION RELEASE COMPLETE message using AM RLC on the DCCH to the UTRAN.

When in state CELL_FACH and if the RRC CONNECTION RELEASE message was received on the CCCH, the UE shall not transmit an RRC CONNECTION RELEASE COMPLETE message.

Any succeeding RRC CONNECTION RELEASE messages that are received by the UE shall be ignored.

The UE shall indicate the release of all current signalling connections ~~flows~~ and radio access bearers to the non-access stratum and pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to the non-access stratum.

From the time of the indication of release to the non-access stratum until the UE has entered idle mode, any non-access stratum request to establish a new RRC connection shall be queued. This new request may be processed only after the UE has entered idle mode.

When in state CELL_FACH and if the RRC CONNECTION RELEASE message was received on the CCCH, the UE shall release all its radio resources, enter idle mode and the procedure ends on the UE side. Actions the UE shall perform when entering idle mode are given in subclause 8.5.2.

8.1.8 Initial Direct transfer

Figure 15: 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 connections ~~and signalling flows~~. It is also used to carry the initial higher layer (NAS) messages over the radio interface.

~~A signalling connection comprises one or several signalling flows. This procedure requests the establishment of a new flow, and triggers, depending on the routing and if no signalling connection exists for the chosen route for the flow~~CN domain~~, the establishment of a signalling connection.~~

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 ~~the initialisation of a new flow~~. This request also includes a request for the transfer of a NAS message. 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. The UE shall transmit the INITIAL DIRECT TRANSFER message on the uplink DCCH using AM RLC on RB 3.

The UE shall set the IE “CN domain identity” as indicated by the upper layers. The UE shall set the IE “Intra Domain NAS Node Selector” as indicated by the upper layers.

~~The System Information Block Type 1 and 13 may contain CN NAS information which the upper layers in the UE can use in choosing the value to set the IE "CN Domain Identity" to. If available the UE shall use this CN NAS information as well as user preference and subscription information in setting the value of IE "CN Domain Identity" to indicate which CN node the NAS message is destined to. If the upper layers in the UE have not set a value for the IE "CN Domain Identity" RRC shall set it to the value "don't care". In addition the UE shall set the IE "Service Descriptor" and the IE "Flow Identifier" to the value allocated by the UE for that particular flow.~~

In CELL_FACH state, the UE shall include IE "Measured results on RACH" into the INITIAL DIRECT TRANSFER message if RACH measurement reporting has been requested in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in "system information block type 12" (or "system information block type 11" if "system information block type 12" is not being broadcast).

When the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC 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". ~~and the IE "Service Descriptor". The UTRAN should use the UE context to store the contents of the IE "Flow Identifier" for that particular flow.~~ An RNC complying to this version of the protocol should ignore the IE “Intra Domain NAS Node Selector”.

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

If the IE "Measured results on RACH" is present in the message, the UTRAN should extract the contents to be used for radio resource control.

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.

8.1.10 Uplink Direct transfer

Figure 17: 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 higher layer (NAS) messages over the radio interface belonging to a signalling ~~flow~~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 ~~after the initial signalling connection is established and upper layer indication is provided indicating that the NAS message belongs to~~on an ~~on-going~~existing signalling ~~flow~~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. The UE shall transmit the UPLINK DIRECT TRANSFER message on the uplink DCCH using AM RLC on RB 3 or RB 4. The UE shall select the RB according to the following:

- if the non-access stratum indicates "low priority" for this message, RB 4 shall be selected, if available. Specifically, for a GSM-MAP based CN, RB 4 shall, if available, be selected when "SAPI 3" is requested. RB 3 shall be selected when RB 4 is not available.

- if the non-access stratum indicates "high priority" for this message, RB 3 shall be selected. Specifically, for a GSM-MAP based CN, RB 3 shall be selected when "SAPI 0" is requested.

The UE shall set the IE “CN domain identity” as indicated by the upper layers. ~~The UE shall set the IE "Flow Identifier" to the same value as that allocated to that particular flow when transmitting the INITIAL DIRECT TRANSFER message for that flow.~~

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 "~~Flow Identifier~~CN domain identity".

If the IE "Measured results on RACH" is present in the message, the UTRAN should extract the contents to be used for radio resource control.

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.

8.1.13 Signalling connection ~~flow~~ release procedure

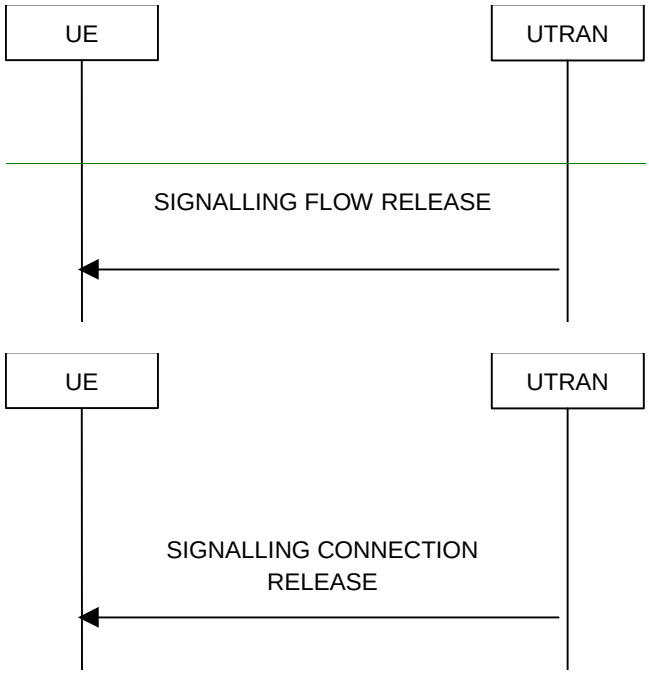

Figure 20: Signalling connection ~~flow~~ release procedure, normal case

8.1.13.1 General

The signalling connection release procedure is used to notify to the UE that one ~~or more~~ of its ~~signalling flows of its~~ ongoing signalling connections has been released. The procedure does not initiate the release of the RRC connection.

8.1.13.2 Initiation of SIGNALLING CONNECTION RELEASE by the UTRAN

~~The UTRAN may initiate the release of one or more signalling flows.~~

To initiate the procedure, the UTRAN transmits a SIGNALLING CONNECTION ~~FLOW~~ RELEASE message on DCCH using AM RLC.

~~The UTRAN should identify the signalling flows to be released using the IE "Flow Identifier".~~

8.1.13.3 Reception of SIGNALLING CONNECTION ~~FLOW~~ RELEASE by the UE

Upon reception of a SIGNALLING CONNECTION ~~FLOW~~ RELEASE message, the UE shall indicate the release of the signalling connection ~~flows~~ identified by the value~~s~~ of the IE " CN domain identity ~~Flow identifier~~" to the corresponding higher layer entities.

8.1.13.4 Invalid SIGNALLING CONNECTION ~~FLOW~~ RELEASE message

If the UE receives a SIGNALLING CONNECTION ~~FLOW~~ RELEASE message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the successful delivery of the RRC STATUS message has been confirmed by RLC:
  - resume normal operation as if the invalid SIGNALLING CONNECTION RELEASE message has not been received.

8.1.14 Signalling connection release request procedure

Figure 21: Signalling connection release request procedure, normal case

8.1.14.1 General

The signalling connection release request procedure is used by the UE to request from the UTRAN that one of its signalling connections should be released. The procedure may in turn initiate the signalling connection ~~flow~~ release or RRC connection release procedure.

8.1.14.2 Initiation

The UE shall initiate the signalling connection release request procedure on receiving a request to release the signalling connection from higher layers.

To initiate the procedure, the UE transmits a SIGNALLING CONNECTION RELEASE REQUEST message on DCCH using AM RLC. ~~When the successful delivery of SIGNALLING CONNECTION RELEASE REQUEST message has been confirmed by RLC, the UE shall delete the released flow identifier(s).~~

The IE " CN domain identity ~~Flow Identifier~~" indicates the signalling connection ~~flow identity~~ which is requested to be released.

8.1.14.3 Reception of SIGNALLING CONNECTION RELEASE REQUEST by the UTRAN

Upon reception of a SIGNALLING CONNECTION RELEASE REQUEST message, the UTRAN requests the release of the signalling connection from the non-access stratum. The non-access stratum may then initiate the release of the signalling connection. ~~may initiate the RRC connection release procedure, if the UE has requested the release of all its remaining signalling connections. If all remaining signalling connections are not requested to be released, the UTRAN should initiate the signalling flow release procedure. In the latter case the UTRAN should include all the signalling flows identified by the "Flow identifiers", associated with the signalling connection being released.~~

10.2.12 INITIAL DIRECT TRANSFER

This message is used to initiate a signalling connection ~~or to establish a new signalling flow~~ based on indication from the upper layers, and to transfer a NAS message~~s~~.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE -> UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.14	
CN information elements				
~~Service Descriptor~~	~~MP~~		~~Service Descriptor 10.3.1.17~~	
~~Flow Identifier~~	~~MP~~		~~Flow Identifier 10.3.1.4~~	~~Allocated by UE for a particular flow~~
CN domain identity	MP		CN domain identity 10.3.1.1	
Intra Domain NAS Node Selector	MP		Intra Domain NAS Node Selector 10.3.1.4	Allocated by NAS
NAS message	MP		NAS message 10.3.1.8	
Measurement information elements				
Measured results on RACH	OP		Measured results on RACH 10.3.7.70	

10.2.47 SIGNALLING CONNECTION RELEASE

This message is used to notify the UE that ~~one of~~ its ongoing signalling connection~~s~~ to a CN domain has been released.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.14	Integrity check info is included if integrity protection is applied
CN information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	
~~Signalling Flow related information list~~	~~MP~~	~~1 to <maxSignallingFlow>~~		~~Flow identifier to be provided for each signalling flow to be released.~~
~~>Flow Identifier~~	~~MP~~		~~Flow Identifier 10.3.1.4~~	

10.2.48 SIGNALLING CONNECTION RELEASE REQUEST

This message is used by the UE to request for the release of a signalling flow.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Message Type	MP		Message type	
CN information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	
~~Flow Identifier~~	~~MP~~		~~Flow Identifier 10.3.1.4~~	~~Flow identifier of signalling flow to be released by UTRAN.~~

10.2.59 UPLINK DIRECT TRANSFER

This message is used to transfer NAS messages for an ~~on-going~~existing signalling connection~~flow~~.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE ->UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.14	Integrity check info is included if integrity protection is applied
CN information elements				
~~Flow Identifier~~	~~MP~~		~~Flow Identifier 10.3.1.4~~	~~Allocated by UE for a particular flow~~
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS message	MP		NAS message 10.3.1.8	
Measurement information elements				
Measured results on RACH	OP		Measured results on RACH 10.3.7.70	

10.3.1.1 CN domain identity

Identifies the type of core network domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CN domain identity	MP		Enumerated (CS domain, PS domain, ~~Don't care~~)	At least 1 spare value needed Criticality: criticality reject is needed

*** *Next change* ***

10.3.1.4 ~~Flow Identifier~~Intra Domain NAS Node Selector

This IE is allocated by the NAS ~~UE for a particular signalling flow on an indication from the upper layers~~.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra Domain NAS Node Selector~~Flow Identifier~~	MP		~~Integer (0…63)~~ Bitstring(16)	

10.3.10 Multiplicity values and type constraint values

The following table includes constants that are either used as multi bounds (name starting with "max") or as high or low value in a type specification (name starting with "lo" or "hi"). Constants are specified only for values appearing more than once in the RRC specification. In case a constant is related to one or more other constants, an expression is included in the "value" column instead of the actual value.

Constant	Explanation	Value
CN information		
MaxCNdomains	Maximum number of CN domains	4
~~MaxSignallingFlow~~	~~Maximum number of flow identifiers~~	~~16~~
UTRAN mobility information		
MaxRAT	Maximum number or Radio Access Technologies	maxOtherRAT + 1
MaxOtherRAT	Maximum number or other Radio Access Technologies	15
MaxURA	Maximum number of URAs in a cell	8
MaxInterSysMessages	Maximum number of Inter System Messages	4
MaxRABsetup	Maximum number of RABs to be established	16
UE information		
MaxPDCPalgoType	Maximum number of PDCP algorithm types	8
MaxDRACclasses	Maximum number of UE classes which would require different DRAC parameters	8
MaxFrequencybands	Maximum number of frequency bands supported by the UE as defined in 25.102	4
MaxPage1	Number of UEs paged in the Paging Type 1 message	8
MaxSystemCapability	Maximum number of system specific capabilities that can be requested in one message.	16
RB information		
MaxPredefConfig	Maximum number of predefined configurations	16
MaxRB	Maximum number of RBs	32
MaxSRBsetup	Maximum number of signalling RBs to be established	8
MaxRBperRAB	Maximum number of RBs per RAB	8
MaxRBallRABs	Maximum number of non signalling RBs	27
MaxRBMuxOptions	Maximum number of RB multiplexing options	8
MaxLoCHperRLC	Maximum number of logical channels per RLC entity	2
TrCH information		
MaxTrCH	Maximum number of transport channels used in one direction (UL or DL)	32
MaxTrCHpreconf	Maximum number of preconfigured Transport channels, per direction	16
MaxCCTrCH	Maximum number of CCTrCHs	8
MaxTF	Maximum number of different transport formats that can be included in the Transport format set for one transport channel	32
maxTF-CPCH	Maximum number of TFs in a CPCH set	16
MaxTFC	Maximum number of Transport Format Combinations	1024
maxTFCI-1-Combs	Maximum number of TFCI (field 1) combinations	512
maxTFCI-2-Combs	Maximum number of TFCI (field 2) combinations	512
MaxCPCHsets	Maximum number of CPCH sets per cell	16
MaxSIBperMsg	Maximum number of complete system information blocks per SYSTEM INFORMATION message	16
MaxSIB	Maximum number of references to other system information blocks.	32
maxSIB-FACH	Maximum number of references to system information blocks on the FACH	8
PhyCH information		
MaxSubCh	Maximum number of sub-channels on PRACH	12
MaxPCPCH-APsubCH	Maximum number of available sub-channels for AP signature on PCPCH	12
MaxPCPCH-CDsubCH	Maximum number of available sub-channels for CD signature on PCPCH	12
MaxSig	Maximum number of signatures on PRACH	16
MaxPCPCH-APsig	Maximum number of available signatures for AP on PCPCH	16
MaxPCPCH-CDsig	Maximum number of available signatures for CD on PCPCH	16
MaxAC	Maximum number of access classes	16
MaxASC	Maximum number of access service classes	8
MaxASCmap	Maximum number of access class to access service classes mappings	7
MaxASCpersist	Maximum number of access service classes for which persistence scaling factors are specified	6
MaxPRACH	Maximum number of PRACHs in a cell	16
MaxFACHPCH	Maximum number of FACHs and PCHs mapped onto one secondary CCPCHs	8
MaxRL	Maximum number of radio links	8

MaxSCCPCH	Maximum number of secondary CCPCHs per cell	16
MaxDPDCH-UL	Maximum number of DPDCHs per cell	6
MaxDPCH-DLchan	Maximum number of channelisation codes used for DL DPCH	8
MaxDPCHcodesPerTS	Maximum number of codes for one timeslots (TDD)	16
MaxPUSCH	Maximum number of PUSCHs	(8)
MaxPDSCH	Maximum number of PDSCHs	8
MaxPDSCHcodes	Maximum number of codes for PDSCH	16
MaxPDSCH-TFCIgroups	Maximum number of TFCI groups for PDSCH	256
MaxPDSCHcodeGroups	Maximum number of code groups for PDSCH	256
MaxPCPCHs	Maximum number of PCPCH channels in a CPCH Set	64
MaxPCPCH-SF	Maximum number of available SFs on PCPCH	7
MaxTS	Maximum number of timeslots used in one direction (UL or DL)	14
HiPUSCHIdentities	Maximum number of PDSCH Identities	64
HiPDSCHIdentities	Maximum number of PDSCH Identities	64
Measurement information		
MaxTGPS	Maximum number of transmission gap pattern sequences	6
MaxAdditionalMeas	Maximum number of additional measurements for a given measurement identity	4
MaxMeasEvent	Maximum number of events that can be listed in measurement reporting criteria	8
MaxMeasParEvent	Maximum number of measurement parameters (e.g. thresholds) per event	2
MaxMeasIntervals	Maximum number of intervals that define the mapping function between the measurements for the cell quality Q of a cell and the representing quality value	1
MaxCellMeas	Maximum number of cells to measure	32
MaxFreq	Maximum number of frequencies to measure	8
MaxSat	Maximum number of satellites to measure	16
HiRM	Maximum number that could be set as rate matching attribute for a transport channel	256
Frequency information		
MaxFDDFreqList	Maximum number of FDD carrier frequencies to be stored in USIM	4
MaxTDDFreqList	Maximum number of TDD carrier frequencies to be stored in USIM	4
MaxFDDFreqCellList	Maximum number of neighbouring FDD cells to be stored in USIM	32
MaxTDDFreqCellList	Maximum number of neighbouring TDD cells to be stored in USIM	32
MaxGSMCellList	Maximum number of GSM cells to be stored in USIM	32

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
...

-- ************************************************
--
-- INITIAL DIRECT TRANSFER
--
-- ************************************************

InitialDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        serviceDescriptor               ServiceDescriptor,
        flowIdentifier                  FlowIdentifier,
        cn-DomainIdentity               CN-DomainIdentity,
        intraDomainNasNodeSelector      IntraDomainNasNodeSelector,
        nas-Message                     NAS-Message,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

...

-- ************************************************
--
-- SIGNALLING CONNECTION RELEASE
--
-- ************************************************

SignallingConnectionRelease::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          SignallingConnectionRelease-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

SignallingConnectionRelease-v1-IEs ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity
        signallingFlowInfoList          SignallingFlowInfoList
}

-- ************************************************
--
-- SIGNALLING CONNECTION RELEASE REQUEST
--
-- ************************************************

SignallingConnectionReleaseRequest ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity       signallingFlowInfoList
    SignallingFlowInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

...
-- ************************************************
--
-- UPLINK DIRECT TRANSFER
--
-- ************************************************
```

```
UplinkDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,      flowIdentifier
    FlowIdentifier,
        nas-Message                     NAS-Message,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

...
END
```

11.3 Information element definitions

11.3.1 Core network information elements

```
CoreNetwork-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CN-DRX-CycleLengthCoefficient
FROM UserEquipment-IEs

    Min-P-REV,
    NAS-SystemInformationANSI-41,
    NID,
    P-REV,
    SID
FROM ANSI-41-IEs

    maxCNdomains,
    maxSignallingFlow
FROM Constant-definitions;

CN-DomainIdentity ::=               ENUMERATED {
                                        cs-domain,
                                        ps-domain,
                                        not-important,
                                        spare1,
                                        spare2 }

...
FlowIdentifier ::=                  INTEGER (0..63)
IntraDomainNasNodeSelector ::=          BIT STRING (SIZE (16))

...
SignallingFlowInfoList ::=          SEQUENCE (SIZE (1..maxSignallingFlow)) OF
                                        FlowIdentifier

...

END
```

11.4 Constant definitions

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

BEGIN

hiPDSCHidentities           INTEGER ::= 64
hiPUSCHidentities           INTEGER ::= 64
hiRM                        INTEGER ::= 256
maxAC                       INTEGER ::= 16
maxAdditionalMeas           INTEGER ::= 4
maxASC                      INTEGER ::= 8
maxASCmap                   INTEGER ::= 7
maxASCpersist               INTEGER ::= 6
maxCCTrCH                   INTEGER ::= 8
maxCellMeas                 INTEGER ::= 32
maxCellMeas-1               ————————    INTEGER ::= 31

maxCNdomains                INTEGER ::= 4
maxCPCHsets                 INTEGER ::= 16
maxDPCH-DLchan              INTEGER ::= 8
maxDPCHcodesPerTS           INTEGER ::= 16

-- **TODO**
maxDPDCH-UL                 INTEGER ::= 6
maxDRACclasses              INTEGER ::= 8
-- **TODO**
maxFACH                     INTEGER ::= 8
maxFreq                     INTEGER ::= 8
maxFrequencybands           INTEGER ::= 4
maxInterSysMessages         INTEGER ::= 4
maxLoCHperRLC               INTEGER ::= 2
maxMeasEvent                INTEGER ::= 8
maxMeasIntervals            INTEGER ::= 3
maxMeasParEvent             INTEGER ::= 2
maxNoOfMeas                 INTEGER ::= 16
maxOtherRAT                 INTEGER ::= 15
maxPage1                    INTEGER ::= 8
maxPCPCH-APsig              INTEGER ::= 16
maxPCPCH-APsubCh            INTEGER ::= 12
maxPCPCH-CDsig              INTEGER ::= 16
maxPCPCH-CDsubCh            INTEGER ::= 12
maxPCPCH-SF                 INTEGER ::= 7
maxPCPCHs                   INTEGER ::= 64
maxPDCPAlgoType             INTEGER ::= 8
maxPDSCH                    INTEGER ::= 8
maxPDSCH-TFCIgroups         INTEGER ::= 256
maxPRACH                    INTEGER ::= 16
maxPredefConfig             INTEGER ::= 16
maxPUSCH                    INTEGER ::= 8
maxRABsetup                 INTEGER ::= 16
maxRAT                      INTEGER ::= 16
maxRB                       INTEGER ::= 32
maxRBallRABs                INTEGER ::= 27
maxRBMuxOptions             INTEGER ::= 8
maxRBperRAB                 INTEGER ::= 8
maxRL                       INTEGER ::= 8
maxRL-1                     INTEGER ::= 7
maxSat                      INTEGER ::= 16
maxSCCPCH                   INTEGER ::= 16
maxSIB                      INTEGER ::= 32
-- **TODO**
maxSIB-FACH                 INTEGER ::= 8
maxSIBperMsg                INTEGER ::= 16
maxSig                      INTEGER ::= 16
maxSignallingFlow           INTEGER ::= 16
maxSRBsetup                 INTEGER ::= 8
maxSubCh                    INTEGER ::= 12
maxSystemCapability         INTEGER ::= 16
maxTF                       INTEGER ::= 32
maxTF-CPCH                  INTEGER ::= 16
maxTFC                      INTEGER ::= 1024
maxTFCI-2-Combs             INTEGER ::= 512
maxTGPS                     INTEGER ::= 6
maxTrCH                     INTEGER ::= 32
maxTrCHpreconf              INTEGER ::= 16
maxTS                       INTEGER ::= 14
maxTS-1                     INTEGER ::= 13
maxURA                      INTEGER ::= 8
```

END

3GPP TSG RAN WG2#17
Sophia Antipolis, France, 14-17 Nov, 2000

***Document* R2-002341**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.331	CR	574r2	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 2000-11-09

Subject: Ciphering and reset

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

The following modifications have been made:

The activation time for a ciphering configuration shall be considered to be elapsed when an RLC reset occurs, i.e. the new ciphering configuration shall be used immediately after the RLC reset.

2. The description of "unrecoverable error" has been modifed to be consistent with 25.322

Revision 1: The activation time for a ciphering configuration shall be considered to be elapsed also when an RLC re-establishment occurs, i.e. the new ciphering configuration shall be used immediately after the RLC re-establishment.

Clauses affected: 8.1.12.3, 8.1.12.5, 8.3.1.1, 8.3.1.2, 8.3.1.4, 8.6.3.4

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.1.12.3 Reception of SECURITY MODE COMMAND message by the UE

Upon reception of the SECURITY MODE COMMAND message, the UE shall perform the actions for the received information elements according to 8.6.

If the IE "Security capability" is the same as indicated by variable UE_CAPABILITY_TRANSFERRED, the UE shall:

- suspend all radio bearers and signalling radio bearers (except the signalling radio bearer used to receive the SECURITY MODE COMMAND message on the downlink DCCH in RLC-AM) using RLC-AM or RLC-UM that belong to the CN domain indicated in the IE "CN domain identity", with RLC sequence number greater than or equal to the number in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info";
- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
  - include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable, for the respective radio bearer and signalling radio bearer;
- when the radio bearers and signalling radio bearers have been suspended:
  - send a SECURITY MODE COMPLETE message on the uplink DCCH in AM RLC, using the old ciphering and the new integrity protection configuration;
- when the successful delivery of the SECURITY MODE COMPLETE message has been confirmed by RLC:
  - resume data transmission on any suspended radio bearer and signalling radio bearer mapped on RLC-AM or RLC-UM;
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends. If a RLC reset or re-establishment occurs after the SECURITY MODE COMPLETE message has been confirmed by RLC, but before the activation time for the new ciphering configuration has been reached, ~~then~~ the activation time shall be ignored and the new ciphering configuration shall be applied immediately after the RLC reset or RLC re-establishment. ~~but before the activation time for when the new ciphering configuration shall be applied has elapsed, RRC in the UE configures RLC in the UE with the activation times as indicated in the SECURITY MODE COMPLETE, after the RLC reset.~~

For radio bearers and signalling radio bearers used by the CN indicated in the IE "CN domain identity", the UE shall:

- if a new integrity protection key has been received:
  - in the downlink:
    - use the new key;
    - set the HFN component of the downlink COUNT-I to zero at the RRC sequence number indicated in IE "Downlink integrity protection activation info" included in the IE "Integrity protection mode info";

    in the uplink:

    use the new key;
    - set the HFN component of the uplink COUNT-I to zero at the RRC sequence number indicated in IE "Uplink integrity protection activation info" included in the IE "Integrity protection mode info";
- if a new ciphering key is available:
  - in the downlink:
    - use the new key;
    - set the HFN component of the downlink COUNT-C to zero at the RLC sequence number indicated in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info";
  - in the uplink:

- use the new key;

- set the HFN component of the uplink COUNT-C to zero at the RLC sequence number indicated in IE "Radio bearer uplink ciphering activation time info".

If the IE "Security capability" is not the same as indicated by the variable UE_CAPABILITY_TRANSFERRED, the UE shall release all its radio resources, enter idle mode and the procedure ends on the UE side. Actions the UE shall perform when entering idle mode are given in subclause 8.5.2.

8.1.12.4 Cipher activation time too short

If the time specified by the IE "Activation time for DPCH" or the IE "Radio bearer downlink ciphering activation time info" contained in the IE "Ciphering mode info" has elapsed, the UE shall switch immediately to the new ciphering configuration.

8.1.12.5 Reception of SECURITY MODE COMPLETE message by the UTRAN

UTRAN should apply integrity protection on the received SECURITY MODE COMPLETE message and all subsequent messages with the new integrity protection configuration, if changed. When UTRAN has received a SECURITY MODE COMPLETE message and the integrity protection has successfully been applied, UTRAN shall use

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

  - 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;

  - 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;

  - if an RLC reset or re-establishment occurs after the SECURITY MODE COMPLETE message has been received by UTRAN, but before the activation time for the new ciphering configuration has been reached, ~~then~~ the activation time shall be ignored and the new ciphering configuration shall be applied immediately after the RLC reset or RLC re-establishment.~~but before the activation time for new ciphering key has been reached, RRC in UTRAN configures RLC in UTRAN with the new ciphering key and activation time after the RLC reset;~~

- for radio bearers using RLC-TM:

  - the new ciphering configuration for the received RLC PDUs at the CFN as indicated in the IE "Activation time for DPCH" in the IE "Ciphering mode info";

and the procedure ends.

8.3.1.1 General

The main purpose of the cell update procedure is to update UTRAN with the current cell of the UE after cell reselection in CELL_FACH or CELL_PCH state. Secondly, the procedure may be used by the UE to indicate to the UTRAN a transition from URA_PCH or CELL_PCH state to CELL_FACH state prior to transmitting uplink data. Thirdly, the procedure may also be used for supervision of the RRC connection, even if no cell reselection takes place. The cell update procedure can include the resetting of the AM RLC entities for the signalling link and the u-plane link. The UE can use a CELL UPDATE message to notify the unrecoverable error (numberAmount of the retransmissions of the RESET PDU reaches the value of MaxRST DAT and receives no ACK) in an AM RLC entity for the signalling link.

NOTE: PHYSICAL/TRANSPORT CHANNEL RECONFIGURATION COMPLETE message is only used when common channels are configured (doesn't apply to dedicated channels)

8.3.1.2 Initiation

A UE in CELL_FACH, CELL_PCH or URA_PCH state shall initiate the cell update procedure in the following cases:

- Cell reselection: In CELL_FACH or CELL_PCH state, the UE selects another cell.
- Periodic cell update: In CELL_FACH and CELL_PCH state, the timer T305 expires while the UE detects "in the service area" (as specified in 8.5.9) and periodic cell updating has been required in IE "Information for periodical cell and URA update" in System Information Block Type 2.
- RB control response: The UE receives an RB control message initiating a transition from CELL_DCH to CELL_FACH state, but the message does not indicate which cell to camp on. Consequently the UE selects a cell autonomously.
- UL data transmission: In CELL_PCH state and URA_PCH state, the UE makes a state transition to CELL_FACH state in order to transmit UL data.
- Paging response: In CELL_PCH and URA_PCH state, the UE receives a PAGING TYPE 1 message as in subclause 8.1.2.3.
- Re-entering service area: In URA_PCH state, the UE has been out of service area and re-enters service area before T307 expires.

In order to initiate the cell update procedure, the UE shall :

- set the variable PROTOCOL_ERROR_INDICATOR to FALSE;
- move to CELL_FACH state, if not already in that state;
- consider the stored C-RNTI to be invalid until CELL UPDATE CONFIRM message is received when UE detects a new cell;
- suspend data transmission on RB 3 and upward, if RLC-AM or RLC-UM is used on those radio bearers;
- transmit a CELL UPDATE message on the uplink CCCH;
- start timer T302 and reset counter V302.

The UE shall set the IEs in the CELL UPDATE as follows:

- indicate the reason for CELL update in the IE "CELL update cause" corresponding to the initiation cause as listed above;
- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE, the UE shall set the IE "Protocol error indicator" to TRUE and include the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- if the value of the variable PROTOCOL_ERROR_INDICATOR is FALSE, the UE shall set the IE "Protocol error indicator" to FALSE.
- If the UE detects unrecoverable error (amount number of the retransmissions of the RESET PDU reaches the value of MaxRST DAT and receives no ACK) in an AM RLC entity for the signalling link, the UE shall set the

IE "AM_RLC error indication". If the UE detects unrecoverable error in an AM RLC entity (for u-plane) for u-plane link, the UE shall set the IE "AM_RLC error indication (for u-plane)".

- The UE shall include the START values from each CN domain in CELL UPDATE message.

The UE shall include an intra-frequency measurement report in IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in system information block type 12 (or type 11, if system information block type 12 is not being broadcast).

8.3.1.3 T305 expiry and the UE detects that it is out of service area

When the T305 expires and the UE detects that it is "out of service area" as specified in subclause 8.5.5, the UE shall

- start timer T307;
- re-select to a new cell, as described in [4].

8.3.1.3.1 Re-entering of service area

When the UE detects that it is no longer "out of service area" before the expiry of T307, the UE shall:

- transmit a CELL UPDATE message on the uplink CCCH.

8.3.1.3.2 Expiry of timer T307

When the T307 expires, the UE shall:

- move to idle mode;
- release all dedicated resources;
- indicate an RRC connection failure to the non-access stratum.

Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2.

8.3.1.4 Reception of an CELL UPDATE message by the UTRAN

When the UTRAN receives a CELL UPDATE message, it may either:

- transmit a CELL UPDATE CONFIRM message on the downlink DCCH or optionally on the CCCH but only if ciphering is not required; or
- initiate an RRC connection release procedure (see subclause 8.1.4) by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH.

When the UTRAN detects AM_RLC unrecoverable error (~~Amount of the~~ number of retransmissions of the RESET PDU reaches the value of Max~~DAT and receives no ACK~~RST), it waits for CELL UPDATE message from the UE and when the UTRAN receives it, UTRAN commands the UE to reset AM_RLC by sending CELL UPDATE CONFIRM message. This procedure can be used not only in the case of AM_RLC unrecoverable error but also in the case that UTRAN wants to reset AM_RLC for other reasons such as in the case when SRNC Relocation is initiated without keeping RLC status (current counters) from old SRNC to new SRNC.

8.6.3.4 Ciphering mode info

The IE "Ciphering mode info" defines the new ciphering configuration. If the IE "Ciphering mode info" is present, the UE shall check the IE "Ciphering mode command" as part of the IE "Ciphering mode info", and perform the following:

- if IE "Ciphering mode command" has the value "start/restart", the UE shall:

- start or restart ciphering, using the ciphering algorithm (UEA [3G TS 33.102]) indicated by the IE "Ciphering algorithm" as part of the new ciphering configuration. The new ciphering configuration shall be applied as specified below.
- set the variable CIPHERING_STATUS to "Started".

- if the IE "Ciphering mode command" has the value "stop", the UE shall
  - stop ciphering. The new ciphering configuration shall be applied as specified below
  - set the variable CIPHERING_STATUS to "Not started".
- in case the IE "Ciphering mode command" has the value "start/restart" or "stop", the new ciphering configuration shall be applied as follows:
  - if the IE "Activation time for DPCH" is present in the IE "Ciphering mode info", the UE shall apply the new configuration at that time for radio bearers using RLC-TM.
  - if the IE "Radio bearer downlink ciphering activation time info" is present in the IE "Ciphering mode info", the UE shall apply the following procedure for each radio bearer using RLC-AM and RLC-UM indicated by the IE "RB identity":
    - suspend data transmission on the radio bearer
    - store the "RLC send sequence number" for that radio bearer in the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, at which time the new ciphering configuration shall be applied.
    - when the data transmission of that radio bearer is resumed, the UE shall switch to the new ciphering configuration according to the following:
      - use the old ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number smaller than the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN.
      - use the new ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number greater than or equal to the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN
      - for a radio bearer using RLC-AM, when the RLC sequence number indicated in the IE "Radio bearer downlink ciphering activation time info" is not included in the RLC transmission window, the UE may release the old ciphering configuration for that radio bearer.
      - if an RLC reset or re-establishment occurs before the activation time for the new ciphering configuration has been reached, the activation time shall be ignored and the new ciphering configuration shall be applied immediately after the RLC reset or RLC re-establishment.

If the IE "Ciphering mode info" is not present, the UE shall not change the ciphering configuration.

3GPP TSG RAN WG2#17
Sofia Antipolis, France, 13- 17 November 2000

Document R2-002268
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or for SMG, use the format P-99-xxx

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25.331	CR	575r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2	**Date:**	14-11-2000

Subject:	Corrections and clarifications concerning inter RAT change procedures

Work item:	

Category: *(only one category shall be marked with an X)*				**Release:**		
	F	Correction	X		Phase 2	
	A	Corresponds to a correction in an earlier release			Release 96	
	B	Addition of feature			Release 97	
	C	Functional modification of feature			Release 98	
	D	Editorial modification			Release 99	X
					Release 00	

Reason for change:

This CR includes the following change proposals

- the “INTER SYSTEM HANDOVER COMMAND” is renamed to HANDOVER FROM UTRAN message because this is similar to what is used in the other direction and to avoid use of inter system

- clarification is added that PER unaligned encoding is used for the RRC information carried in containers across network interfaces.

- requirements concerning the contents of the inter system message are clarified neither in RRC nor in specifications of other RATs. The proposal is to add clarification for procedures originated from UTRAN-RRC. This applies only to the handover from UTRAN case. An additional failure case has been added covering the inter RAT protocol error case.

- information currently included in ch. 9 that is relevant for the inter RAT procedure specifications has been extracted from there and added to the procedure descriptions. Updating of ch. 9 is proposed to be handled later/ seperately since it needs to take into account the whole chapter including the new part on cell reselection.

- for the handover to UTRAN case, the procedure specification did not cover the case in which UTRAN specifies all RB, TrCH and PhyCH parameters in the handover command message. This case has been added to the procedure specification.

- in case of failure of a handover from UTRAN, the UE either includes a specific RRC failure cause or the general value inter RAT protocol error in combination with an inter RAT message

- for the handover to UTRAN, it should be possible to convey IE “UE system specific capability”. This IE is relevant for the target RAT e.g. it may include information about supported frequencies which is needed when ordering measurements. This IE has been added to the RRC container specified in 14.10.1

Additional changes/ modifications introduced in r1 of this CR:

- for the CELL CHANGE FAILURE FROM UTRAN protocol error information is introduced as for the handover case

- Clarification is added that, the final padding added by the ASN.1 encoder to obtain octet alignment, should not be included in the RRC containter; the resulting container should be a bit string. Previous version of CR suggested to include the final padding since at that time WG3 had not changed yet from using a bit string instead of an octet string

- the possibility that, during cell change to UTRAN, the other RAT's source cell can set the NC mode to be used in the target UMTS cell, as introduce in the original revision of this CR is removed

- for the case in which the handover to UTRAN command message is specified completely, the limitation of the number of RABs to 1, is removed

- the option to send IE RAB NAS Synchronization Indicator has been added for the handover to UTRAN command when using predefined configurations

- the ASN.1 changes have been added

Clauses affected: 8.3.6, 8.3.6.2, 8.3.6.3, 8.3.7, 8.3.7.1- 8.3.7.7, 8.3.x(NEW, including subclauses .1- .3), 8.3.y(NEW, including subclauses .1- .5), 8.3.8, 8.3.8.1- 8.3.8.3, 8.3.9, 8.3.9.1- 8.3.8.4, 10.2.10, 10.2.13, 10.2.14, 10.2.x (NEW), 10.2.y (NEW), 10.3.3.11, 10.3.4.9, 10.3.8.5, 10.3.8.y (NEW), 11.1, 11.2, 11.3.3, 11.3.4, 11.3.7, 11.3.8, 14.10, 14.10.1, 14.13.2.3a (NEW)

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: Additional changes introduced in the r1 version of this CR are shown by means of a different colour (different author)

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.3.6 Inter-~~system~~RAT handover to UTRAN

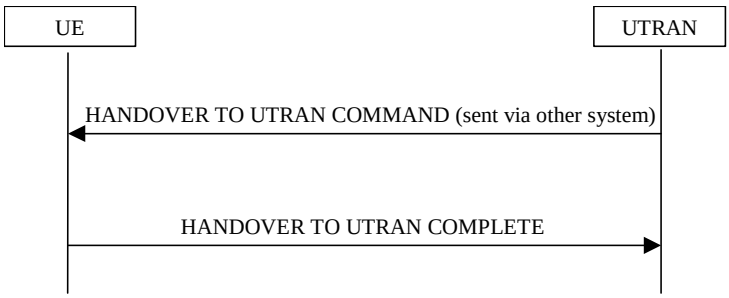

Figure 52: Inter-RAT ~~system~~ handover to UTRAN, successful case

8.3.6.1 General

The purpose of the inter system handover procedure is to, under the control of the network, transfer a connection between the UE and another radio access technology (e.g. GSM) to UTRAN.

8.3.6.2 Initiation

The procedure is initiated when a radio access technology other than UTRAN, e.g. GSM, using system specific procedures, orders the UE to make a handover to UTRAN.

A HANDOVER TO UTRAN COMMAND message is sent to the UE via the radio access technology from which inter-system handover is performed.

In case UTRAN decides to uses a predefined radio configuration that is stored in the UE, it should include the following information in the HANDOVER TO UTRAN COMMAND message.

- the IE "U-RNTI" to be assigned;
- the IE "Predefined radio configuration identity", to indicate which pre-defined configuration of RB, traffic channel and physical channel parameters shall be used;
- PhyCH information elements.

NOTE: When using a predefined configuration ~~D~~during handover to UTRAN, UTRAN can only assign values of IEs "U-RNTI" and "scrambling code" that are within the special subranges defined exclusively for this procedure. UTRAN may re- assign other values after completion of the handover procedure.

In case UTRAN does not use a predefined radio configuration that is stored in the UE, it should include the following information in the HANDOVER TO UTRAN COMMAND message.

- the IE "U-RNTI" to be assigned;
- the complete set of RB, TrCH and PhyCH information elements to be used

8.3.6.3 Reception of HANDOVER TO UTRAN COMMAND message by the UE

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

The UE shall act upon all received information elements as specified in 8.6, unless specified otherwise in the following. The UE shall:

- store the value of the IE "U-RNTI"; and
- in case IE “Specification mode” is set to “Preconfiguration”,
  - initiate the signalling link, the RB(s) and traffic channel(s) in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity";

- 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;

- in case IE “Specification mode” is set to “Complete specification”, initiate the RB(s) and traffic channels in accordance with the the received radio bearer, transport channel and physical channel information elements

- perform an open loop estimation to determine the UL transmission power, taking into account the received IE "Maximum allowed UL TX power" and move to CELL_DCH state;

- apply the same ciphering (ciphered/ unciphered, algorithm) as prior to inter system handover, unless a change of algorithm is requested by means of the "Ciphering algorithm".

If the UE succeeds in establishing the connection to UTRAN, it shall:

- transmit a HANDOVER TO UTRAN COMPLETE message on the uplink DCCH;

- when the successful delivery of the HANDOVER TO UTRAN COMPLETE message has been confirmed by RLC, the procedure ends.

8.3.6.4 Invalid Handover to UTRAN command message

If the UE receives a HANDOVER TO UTRAN COMMAND message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Resume the connection used before the handover to the source radio access technology;

- Indicate a failure to the source radio access technology, using "protocol error" as cause for the failure;

- If possible, transmit an RRC STATUS message to the other radio access technology, and include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- Other details may be specified in the specifications related to the source radio access technology.

8.3.6.5 UE fails to perform handover

If the UE does not succeed to establish the connection to UTRAN, it shall terminate the procedure including release of the associated resources, resume the connection used before the handover and indicate the failure to the other radio access technology.

Upon receiving an indication about the failure from the other radio access technology, UTRAN should release the associated resources and the context information concerning this UE.

8.3.6.6 Reception of message HANDOVER TO UTRAN COMPLETE by the UTRAN

Upon receiving a HANDOVER TO UTRAN COMPLETE message, UTRAN should consider the inter- system handover procedure as completed successfully and indicate this to the CN.

8.3.7 Inter-~~system~~ RAT handover from UTRAN

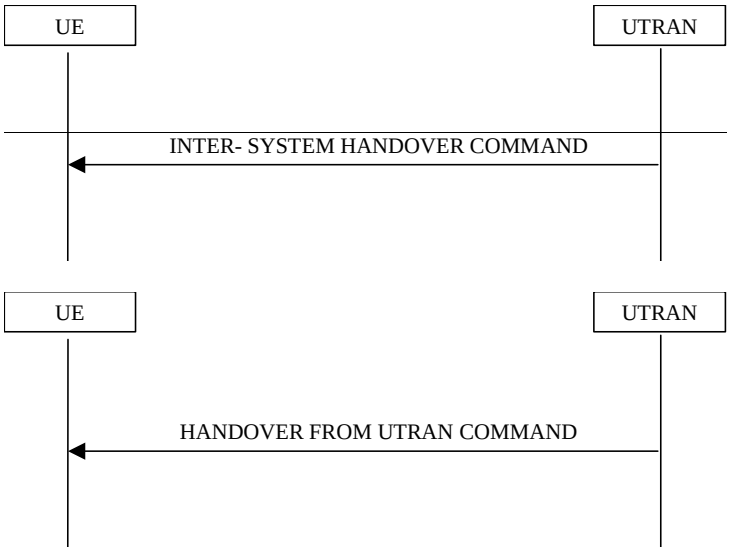

Figure 53: Inter-RAT ~~system~~ handover from UTRAN, successful case

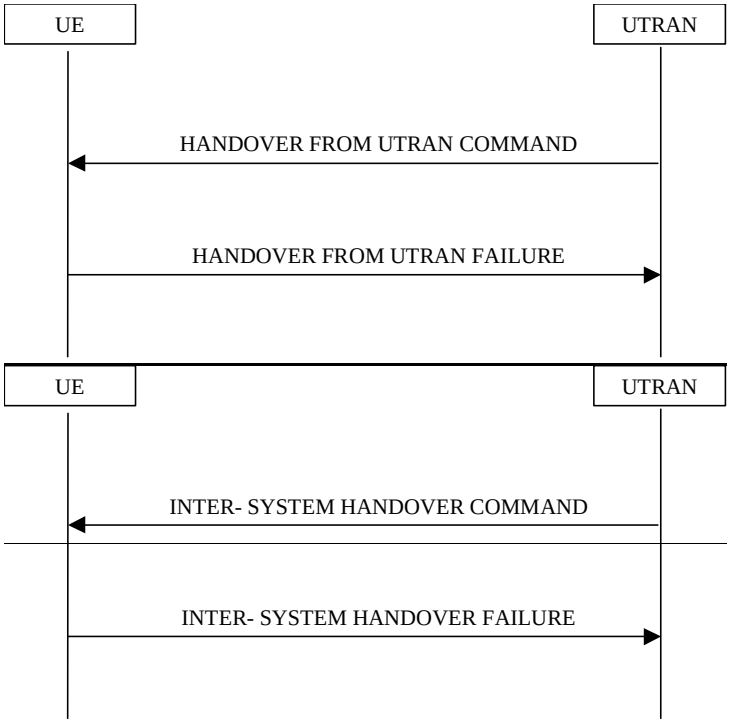

Figure 54: Inter-RAT ~~system~~ handover from UTRAN, failure case

8.3.7.1 General

The purpose of the inter-RAT ~~system~~ 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 and CELL_FACH state.

NOTE: This procedure applies when the UE has a(t least one) RAB in use for a CS domain service (speech, UDI).

The UE does not need to support handover concerning more than one RAB in the CS domain. Furthermore, the UE need not support simultaneous handover of PS domain RABs in addition to the RAB used for CS domain services. Nevertheless, the procedure specification provided in the following covers these cases. In case a UEs receives a request for a not supported handover case, it shall apply the procedure "UE fails to complete the requested handover".

8.3.7.2 Initiation

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

To initiate the procedure, UTRAN sends an ~~INTER- SYSTEM~~ HANDOVER FROM UTRAN COMMAND message.

8.3.7.3 Reception of an ~~INTER- SYSTEM~~ HANDOVER FROM UTRAN COMMAND message by the UE

The UE shall take the following actions:

- establish the connection to the other radio access technology, by using the contents of the IE "Inter~~- system~~ RAT message". This IE contains a message specified in ~~some~~ 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 other radio access technology. The correspondence between the value of the IE "System type", ~~and~~ the standard to apply and the message contained within IE "inter RAT message is the following:

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM except PCS 1900	GSM 04.18, version 8.5.0 or later, as if the message was sent on any frequency except in the 1900 bandwidth	INTER SYSTEM TO UTRAN HANDOVER COMMAND
PCS 1900	GSM 04.18, version 8.5.0 or later, as if the message was sent was in the 1900 bandwidth	INTER SYSTEM TO UTRAN HANDOVER COMMAND
cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

- In case IE "RAB info" is not included in the HANDOVER FROM UTRAN COMMAND message, initiate handover for all RABs used by the UE.

- In case one or more IEs "RAB info" is included in the HANDOVER FROM UTRAN COMMAND message, the UE shall initiate handover for the RABs specified within this IE(s). Other RABs used by the UE, if any, shall not be affected

- ~~for each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target radio access technology given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].~~

- ~~-~~switch the current connection to the other radio access technology.

NOTE 1: 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.

~~NOTE 2: The release of the UMTS radio resources is initiated by the other radio access technology.~~

~~NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.~~

8.3.7.4 Successful completion of the inter-~~system~~ RAT handover

Upon successfully completing the handover, UTRAN should release the radio connection and remove all context information for the concerned UE.

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

8.3.7.5 UE fails to complete requested handover

If the UE does not support the requested handover scenario or does not succeed to establish the connection to the other radio access technology, it shall

- resume the connection to UTRAN using the resources used before receiving the ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN COMMAND message; and

- transmit the ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN FAILURE message has been confirmed by RLC, the procedure ends. The UE shall set the cause value as specified within IE "failure cause" as follows:

  - to " Configuration unacceptable" in case the UE does not support the requested configuration. This case includes the case in which the UE does not support the requested handover scenario e.g. handover including multiple CS domain RABs

  - to “Physical channel failure” in case the UE did not succeed to establish the radio connection

8.3.7.6 Invalid ~~INTER-SYSTEM~~ 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 concerned other RAT, the UE shall perform procedure specific error handling as follows:

- Transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" to the cause value "Inter-RAT protocol error".

- Include the IE " Inter-System message" in case the other RAT provides further details about the inter RAT protocol error.

- When the transmission of the HANDOVER FROM UTRAN FAILURE message has been confirmed by RLC, the UE shall resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received and the procedure ends.

If the ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN COMMAND message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- transmit a ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;

- set the IE "failure cause" to the cause value "protocol error";

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

- when the successful delivery of the ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN FAILURE message has been confirmed by RLC:

  - resume normal operation as if the invalid ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN COMMAND message has not been received and the procedure ends.

8.3.7.7 Reception of an ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN FAILURE message by UTRAN

Upon receiving an ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN FAILURE message, UTRAN may release the resources in the other radio access technology.

8.3.x Inter-RAT cell change order to UTRAN

8.3.x.1 General

The purpose of the inter-RAT cell change order to UTRAN procedure is to, under the control of the other radio access technology, transfer a connection between the UE and another radio access technology (e.g. GSM/GPRS) to UTRAN.

8.3.x.2 Initiation

The procedure is initiated when a radio access technology other than UTRAN, e.g. GSM/GPRS, using procedures specific for that RAT, orders the UE to change to a UTRAN cell.

NOTE 1: Within the message used to order the UE to change to a UTRAN cell, the other RAT shall specify the identity of the target UTRAN cell as specified in the specifications for that RAT.

~~NOTE 2: In case the other RAT initiates handover for other reasons than radio link conditions, it should inidate the cell selection mode the UE shall apply in the target UTRAN cell in order to avoid ping pong~~

The UE shall initiate an RRC connection establishment procedure as specified in subclause 8.1.3 except that the IE "establishment cause" in the RRC CONNECTION REQUEST message shall be set to "Inter-RAT cell change order". Furthermore, the UE shall indicate which cell selection mode it starts with in the new cell by means of IE “Cell selection mode”.

NOTE ~~3~~2: UTRAN may use the establishment cause for admission control, e.g. to prioritise existing connections above new requests and/ or to prevent that the UE returns to the other RAT due to general radio link conditions e.g. for service based handovers.

8.3.x.3 UE fails to complete an inter-RAT cell change order

If the inter-system cell reselection fails the UE shall return to the other radio access technology and proceed as specifed for that RAT.

NOTE: The cell change was network ordered. Therefore, failure to change to the target cell should not cause the UE to move to UE- controlled cell selection.

8.3.y Inter-RAT cell change order from UTRAN

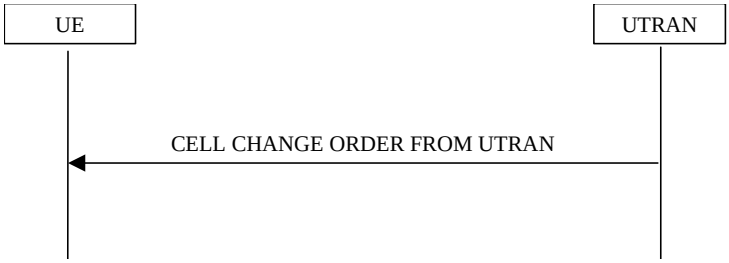

Figure y1: Inter–RAT cell change order from UTRAN

8.3.y.1 General

The purpose of the inter-RAT cell change order 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 and CELL_FACH state.

NOTE: This procedure applies when the UE has a(t least one) RABs in use for a PS domain service.

The UE does not need to support a cell change order concerning a subset of the RAB in use. Furthermore, the UE need not support a cell change order received while it has one or more CS domain RABs in use. Nevertheless, the procedure specification provided in the following covers these cases. In case a UEs receives a request for a not supported handover case, it shall apply the procedure “UE fails to complete the requested cell change order”.

8.3.y.2 Initiation

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

To initiate the procedure, UTRAN sends a CELL CHANGE ORDER FROM UTRAN message.

8.3.y.3 Reception of an CELL CHANGE ORDER FROM UTRAN message by the UE

The UE shall take the following actions:

- establish the connection to the other radio access technology, as specified within IE “Target cell info”. This IE specifies the target cell identity, in accordance with the specifications for that other RAT. In case the target cell concerns a GSM/ GPRS cell, IE “Target cell info” may also include IE “NC mode”, which specifies the cell selection mode to be applied in the target cell. If IE “NC mode” is not included in the CELL CHANGE ORDER FROM UTRAN, the UE shall retrieve it from the target cell as specified in TS 04.18. The UE shall act upon IE “NC mode” as specified in TS 04.18. ~~by using the contents of the IE "Inter system message". This IE contains a message specified in some other standard, as indicated by the IE "System type", and carries information about the candidate/ target cell identifier(s) and radio parameters relevant for the other radio access technology. The correspondence between the value of the IE "System type" and the standard to apply is the following:~~

- In case IE "RAB info" is not included in the CELL CHANGE ORDER FROM UTRAN message, initiate cell change for all RABs used by the UE.

- In case one or more IEs "RAB info" is included in the CELL CHANGE ORDER ~~HANDOVER~~ FROM UTRAN ~~COMMAND~~ message, the UE shall initiate handover for the RABs specified within this IE(s). Other RABs used by the UE, if any, shall not be affected.

- switch the current connection to the other radio access technology.

NOTE 1: 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.y.4 Successful completion of the cell change order

Upon successfully completing the cell change order, UTRAN should release the radio connection and remove all context information for the concerned UE.

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

8.3.y.5 UE fails to complete requested cell change order

If the UE does not succeed to establish the connection to the other radio access technology, it shall

- resume the connection to UTRAN using the resources used before receiving the CELL CHANGE ORDER FROM UTRAN message

- transmit the CELL CHANGE FAILURE FROM UTRAN message on uplink DCCH using AM RLC. When the successful delivery of the CELL CHANGE FAILURE FROM UTRAN message has been confirmed by RLC, the procedure ends. The UE shall set the cause value as specified within IE "failure cause" as follows:

  - to " Configuration unacceptable" in case the UE does not support the requested configuration

  - to “Physical channel failure” in case the UE did not succeed to establish the radio connection

NOTE: The cell change was network ordered. Therefore, failure to change to the target cell should not cause the UE to move to UE- controlled cell selection.

8.3.8 Inter-~~system~~ RAT cell reselection to UTRAN

8.3.8.1 General

The purpose of the inter-RAT ~~system~~ cell reselection procedure to UTRAN is to, under the control of the UE and to some extent the other radio access technology, transfer a connection between the UE and another radio access technology (e.g. GSM/GPRS) to UTRAN.

8.3.8.2 Initiation

When the UE makes an inter-~~system~~ RAT cell reselection to UTRAN according to the criteria specified in TS 25.304, it shall initiate this procedure. The inter-~~system~~ RAT cell reselection made by the UE may use system information broadcast from the other radio access technology or UE dedicated information.

The UE shall initiate an RRC connection establishment procedure as specified in subclause 8.1.3 except that the IE "establishment cause" in the RRC CONNECTION REQUEST message shall be set to "Inter-~~system~~ RAT cell reselection". After initiating an RRC connection establishment, the UE shall release all resources specific to the other radio access technology.

8.3.8.3 UE fails to complete an inter-~~system~~ RAT cell reselection

If the inter-system cell reselection fails before the UE has initiated the RRC connection establishment the UE may return back to the other radio access technology.

If the RRC connection establishment fails the UE shall enter idle mode.

8.3.9 Inter-~~system~~ RAT cell reselection from UTRAN

8.3.9.1 General

The purpose of the inter-RAT ~~system~~ cell reselection procedure from UTRAN is to, under the control of the UE and to some extent the network, transfer a connection between the UE and UTRAN to another radio access technology (e.g. GSM/GPRS).

8.3.9.2 Initiation

This procedure may be initiated in states CELL_FACH, CELL_PCH or URA_PCH.

When the UE based on received system information makes a cell reselection to a radio access technology other than UTRAN, e.g. GSM/GPRS, according to the criteria specified in TS 25.304, the UE shall.

- start timer T309;
- initiate the establishment of a connection to the other radio access technology according to its specifications.

8.3.9.3 Successful cell reselection

When the UE has succeeded in reselecting a cell in the other radio access technology and has initiated ~~an~~ the establishment of a connection, it shall stop timer T309 and release all UTRAN specific resources.

UTRAN should release all UE dedicated resources upon indication that the UE has completed a connection establishment to the other radio access technology.

8.3.9.4 Expiry of timer T309

If the timer T309 expires before the UE succeeds to initiate ~~an~~ the establishment of a connection to the other radio access technology, the UE shall resume the connection to UTRAN using the resources used before initiating the inter-RAT ~~system~~ cell reselection procedure.

9.4 Inter-system handover with PSTN/ISDN domain services

When using PSTN / ISDN domain services, UTRAN is using an Inter-Radio access system Handover Procedure and GSM is using a Handover procedure for the transition from UTRAN Connected Mode to GSM Connected Mode.

9.5 Inter-system handover with IP domain services

When using IP domain services, the UE initiates cell reselection from a GSM/GPRS cell to a UTRAN cell and then uses the RRC Connection Establishment procedure for the transition to UTRAN Connected mode.

When the RRC Connection is established from Idle Mode (GPRS Packet Idle Mode) the RRC CONNECTION REQUEST message contains an indication, that UTRAN needs to continue an already established GPRS UE context from the CN. This indication allows UTRAN to e.g. prioritise the RRC CONNECTION REQUEST from the UE.

In UTRAN connected mode UTRAN is using UE or network initiated cell reselection to change from a UTRAN cell to a GSM/GPRS cell. If the cell reselection was successful the UE enters Idle Mode (GPRS Packet Idle Mode). The UE sends a packet channel request from Idle Mode (GPRS Packet Idle mode) to establish a Temporary Block flow and enter GPRS Packet Transfer Mode. In the GPRS Packet Transfer Mode the UE sends a RA Update request message. The RA Update Request message sent from the UE contains an indication that GSM/GPRS need to continue an already established UTRAN UE context from the CN. This means that the RA Update request is always sent for the transition from UTRAN Connected Mode to GSM/GPRS regardless if the RA is changed or not.

NOTE: The reason for using RA update instead of a new message is to reduce the impact on the existing GSM/GPRS specification.

9.6 Inter-system handover with simultaneous IP and PSTN/ISDN domain services

NOTE: This is an initial assumption that needs to be seen by SMG2 and requiring checking by SMG2, when the work on this item has progressed.

9.6.1 Inter-system handover UTRAN to GSM / BSS

For a UE in CELL_DCH state using both PSTN / ISDN and IP Domain services the Inter-system handover procedure is based on measurement reports from the UE but initiated from UTRAN.

The UE performs the Inter-system handover from UTRAN Connected Mode to GSM Connected Mode first. When the UE has sent handover complete message to GSM / BSS the UE initiates a temporary block flow towards GPRS and sends a RA update request.

If the Inter-system handover from UTRAN Connected Mode to GSM Connected Mode was successful the handover is considered as successful regardless if the UE was able to establish a temporary block flow or not towards GPRS.

In case of Inter-system handover failure the UE has the possibility to go back to UTRAN Connected Mode and re-establish the connection in the state it originated from without attempting to establish a temporary block flow. If the UE has the option to try to establish a temporary block flow towards GSM / GPRS after Inter-system handover failure is FFS.

9.6.2 Inter-system handover GSM / BSS to UTRAN

For a UE in GSM Connected Mode using both PSTN / ISDN and IP domain services the Inter-system handover procedure is based on measurement reports from the UE but initiated from GSM / BSS.

The UE performs the Inter-system handover from GSM Connected Mode to UTRAN Connected Mode.

In UTRAN Connected Mode both services are established in parallel.

If the Inter-System handover from GSM Connected mode to UTRAN Connected Mode was successful the handover is considered as successful.

In case of Inter-system handover failure the UE has the possibility to go back to GSM Connected Mode and re-establish the connection in the state it originated from.

10.2.10 HANDOVER TO UTRAN COMMAND

This message is sent to the UE via other system to make a handover to UTRAN.

RLC-SAP: N/A (Sent through a different RAT)

Logical channel: N/A (Sent through a different RAT)

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
New U-RNTI	MP		U-RNTI Short 10.3.3.46	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
Ciphering algorithm	OP		Ciphering algorithm 10.3.3.4	
~~RAB info~~	~~MP~~		~~RAB info short 10.3.4.9~~	~~One RAB is established~~
CHOICE specification mode	MP			
>Complete specification				
UE information elements				
~~>>Re-establishment timer~~	~~MP~~		~~Re-establishment timer 10.3.3.29~~	
RB information elements				
>>Signalling RB information to setup list	MP	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 setup list~~	~~MP~~	~~1 to <maxRBperRAB>~~		
~~>>>RB information to setup~~	~~MP~~		~~RB information to setup 10.3.4.20~~	
Uplink transport channels				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
Downlink transport channels				
>>DL Transport channel information common for all transport channels	MP		DL Transport channel information common for	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			all transport channels 10.3.5.6	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
Uplink radio resources				
>>Uplink DPCH info	MP		Uplink DPCH info 10.3.6.86	
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.12	
Downlink radio resources				
>>CHOICE *mode*	MP			
>>>FDD				
>>>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.29	
>>>TDD				(no data)
>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.23	
>>Downlink information per radio link	MP	1 to <maxRL>		
>>>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.26	
>Preconfiguration				
>>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
RAB info	OP		RAB info Post 10.3.4.9	One RAB is established
>>Uplink DPCH info	MP		Uplink DPCH info Post 10.3.6.87	
Downlink radio resources				
>>CHOICE *mode*				
>>>FDD				
>>>>Downlink information common for all radio links			Downlink information common for all radio links Post 10.3.6.24	
>>>TDD				(no data)
>>Downlink information per radio link	MP	1 to <maxRL>		Send downlink information for each radio link to be set-up. In TDD MaxRL is 1.
>>>Downlink information for each radio link	MP		Downlink information for each radio link Post	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			10.3.6.27	
Frequency info	MP		Frequency info 10.3.6.35	
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.38	
CHOICE mode	MP			
>FDD				(no data)
>TDD				
>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.58	

10.2.11 HANDOVER TO UTRAN COMPLETE

This message is sent by the UE when a handover to UTRAN has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
START list	CH	1 to <maxCNdomains>		START [TS 33.102] values for all CN domains. The IE is mandatory if it has not been transferred prior to the handover.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.36	

10.2.13 ~~INTER-SYSTEM~~ 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-~~System~~ 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
Message Type	MP		Message Type	
Integrity check info	CH		Integrity check info 10.3.3.14	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over
>RAB info	~~O~~MP		RAB info 10.3.4.8	~~Remaining radio access bearer if any~~
Inter-~~System~~ RAT message	MP		Inter-~~System~~ RAT message 10.3.8.6	

10.2.14 ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN FAILURE

This message is sent on the RRC connection used before the Inter-System 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
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.14	
Other information elements				
Inter-~~System~~ RAT handover failure	OP		Inter-~~System~~ RAT handover failure 10.3.8.5	

10.2.~~13~~x CELL CHANGE ORDER FROM UTRAN

This message is used to order a cell change from UMTS to another system e.g. GSM.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
Integrity check info	CH		Integrity check info 10.3.3.14	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over
>RAB info	MP		RAB info 10.3.4.8	
Target cell description	MP			
>CHOICE *Radio Access Technology*	MP			At least one spare choice, Criticality: Reject, is needed.
>>GSM				
>>> BSIC	MP		BSIC 10.3.8.2	
>>>BCCH ARFCN	MP		Integer (0..1023)	GSM TS 04.18
>>>NC mode	OP		Bitstring(3)	GSM TS 04.18
>>IS-2000				
~~Cell change mode~~	~~OP~~		~~Enumerated (network controlled, UE controlled)~~	

10.2.~~14~~y CELL CHANGE FAILURE FROM UTRAN

This message is sent on the RRC connection used before the Cell change order from UTRAN 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
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.14	
Other information elements				
Inter-RAT ~~handover~~change failure ~~cause~~	MD		Inter-RAT change failure 10.3.8.y ~~Enumerated(Configuration unacceptable, physical channel failure, protocol error)~~	~~Default value is "unspecified".~~ ~~At least 3 spare values, criticality = default, are required~~

10.3.3.11 Establishment cause

Cause for an RRC connection establishment request.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Establishment cause	MP		Enumerated(Originating Conversational Call, Originating Streaming Call, Originating Interactive Call, Originating Background Call, Originating Subscribed traffic Call, Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Emergency Call, Inter-~~system~~ RAT cell re-selection, Inter-RAT cell change order, Registration, Detach, SMS, Call re-establishment)	At least 1~~7~~6 spare values, Criticality: reject, are needed

NOTE: These causes shall be aligned with causes received from higher layers.

10.3.3.12 Failure cause and error information

Cause for failure to perform the requested procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	MP		Enumerated (Configuration unsupported, physical channel failure, incompatible simultaneous reconfiguration, protocol error) , compressed mode runtime error)	At least 3 spare values, Criticality: reject, are needed
Protocol error information	CV-*ProtErr*		Protocol error information 10.3.8.10	
Deleted TGPSI	*CV-CompModeErr*		TGPSI 10.3.6.80	

Condition	Explanation
ProtErr	Presence is mandatory if the IE "Failure cause" has the value "Protocol error"; otherwise the element is not needed in the message.
CompModeErr	Presence is mandatory if the IE "Failure cause" has the value " Compressed mode runtime error"; otherwise the element is not needed in the message

10.3.4.8 RAB info

This IE contains information used to uniquely identify a radio access bearer.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB identity	MP		RAB identity 10.3.1.14	
CN domain identity	MP		CN domain identity 10.3.1.1	
RAB NAS Synchronization Indicator	OP		RAB NAS Synchronization info 10.3.4.12	
Re-establishment timer	MP		Re-establishment timer 10.3.3.29	

~~10.3.4.9 RAB info short~~10.3.4.9 RAB info Post

This IE contains information used to uniquely identify a radio access bearer.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB identity	MP		RAB identity 10.3.1.14	
CN domain identity	MP		CN domain identity 10.3.1.1	
RAB NAS Synchronization Indicator	OP		RAB NAS Synchronization info 10.3.4.12	

10.3.8.5 Inter-~~System~~RAT handover failure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-~~System~~ RAT handover failure cause	MD		Enumerated(Configuration unacceptable, physical channel failure, protocol error, inter-RAT protocol error, unspecified)	Default value is "unspecified". At least 2~~3~~ spare values, criticality = default, are required
Protocol error information	CV-*ProtErr*		Protocol error information 10.3.8.10	
Inter-System message	OP		Inter-System message 10.3.8.6	

Condition	Explanation
ProtErr	If the IE "Inter-system handover failure cause" has the value "Protocol error"

10.3.8.y Inter-RAT change failure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT change failure cause	MD		Enumerated(Configuration unacceptable, physical channel failure, protocol error)	Default value is "unspecified". At least 3 spare values, criticality = default, are required
Protocol error information	CV-*ProtErr*		Protocol error information 10.3.8.10	

Condition	Explanation
ProtErr	If the IE "Inter-system handover failure cause" has the value "Protocol error"

11.1 General message structure

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

BEGIN

IMPORTS

    ActiveSetUpdate,
    ActiveSetUpdateComplete,
    ActiveSetUpdateFailure,
    CellChangeOrderFromUTRAN
    CellChangeFailureFromUTRAN,
    CellUpdate,
    CellUpdateConfirm-CCCH,
    CellUpdateConfirm,
    CounterCheck,
    CounterCheckResponse,
    DownlinkDirectTransfer,
    DownlinkOuterLoopControl,
    HandoverToUTRANComplete,
    InitialDirectTransfer,
    InterSystemHandoverCommand-GSM,
    InterSystemHandoverCommand-CDMA2000,
    InterSystemHandoverFailure,
    MeasurementControl,
    MeasurementControlFailure,
    MeasurementReport,
    PagingType1,
    PagingType2,
    PhysicalChannelReconfiguration,
    PhysicalChannelReconfigurationComplete,
    PhysicalChannelReconfigurationFailure,
    PhysicalSharedChannelAllocation,
    PUSCHCapacityRequest,
    RadioBearerReconfiguration,
    RadioBearerReconfigurationComplete,
    RadioBearerReconfigurationFailure,
    RadioBearerRelease,
    RadioBearerReleaseComplete,
    RadioBearerReleaseFailure,
    RadioBearerSetup,
    RadioBearerSetupComplete,
    RadioBearerSetupFailure,
    RRCConnectionReEstablishment,
    RRCConnectionReEstablishment-CCCH,
    RRCConnectionReEstablishmentComplete,
    RRCConnectionReEstablishmentRequest,
    RRCConnectionReject,
    RRCConnectionRelease,
    RRCConnectionRelease-CCCH,
    RRCConnectionReleaseComplete,
    RRCConnectionReleaseComplete-CCCH,
    RRCConnectionRequest,
    RRCConnectionSetup,
    RRCConnectionSetupComplete,
    RRCStatus,
    SecurityModeCommand,
    SecurityModeComplete,
    SecurityModeFailure,
    SignallingConnectionRelease,
    SignallingConnectionReleaseRequest,
    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

    IntegrityCheckInfo
```

```
FROM UserEquipment-IEs;

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

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

DL-DCCH-MessageType ::= CHOICE {
    activeSetUpdate                     ActiveSetUpdate,
    cellChangeOrderFromUTRAN            CellChangeOrderFromUTRAN,
    cellUpdateConfirm                   CellUpdateConfirm,
    counterCheck                        CounterCheck,
    downlinkDirectTransfer              DownlinkDirectTransfer,
    downlinkOuterLoopControl            DownlinkOuterLoopControl,
    interSystemHandoverCommand-GSM      InterSystemHandoverCommand-GSM,
    interSystemHandoverCommand-CDMA2000 InterSystemHandoverCommand-CDMA2000,
    measurementControl                  MeasurementControl,
    pagingType2                         PagingType2,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration,
    physicalSharedChannelAllocation     PhysicalSharedChannelAllocation,
    radioBearerReconfiguration          RadioBearerReconfiguration,
    radioBearerRelease                  RadioBearerRelease,
    radioBearerSetup                    RadioBearerSetup,
    rrcConnectionReEstablishment        RRCConnectionReEstablishment,
    rrcConnectionRelease                RRCConnectionRelease,
    securityModeCommand                 SecurityModeCommand,
    signallingConnectionRelease         SignallingConnectionRelease,
    transportChannelReconfiguration     TransportChannelReconfiguration,
    transportFormatCombinationControl   TransportFormatCombinationControl,
    ueCapabilityEnquiry                 UECapabilityEnquiry,
    ueCapabilityInformationConfirm      UECapabilityInformationConfirm,
    uplinkPhysicalChannelControl        UplinkPhysicalChannelControl,
    uraUpdateConfirm                    URAUpdateConfirm,
    utranMobilityInformation            UTRANMobilityInformation,
    extension                           NULL
}

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

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

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete             ActiveSetUpdateComplete,
    activeSetUpdateFailure              ActiveSetUpdateFailure,
    cellChangeFailureFromUTRAN          CellChangeFailureFromUTRAN,
    counterCheckResponse                CounterCheckResponse,
    handoverToUTRANComplete             HandoverToUTRANComplete,
    initialDirectTransfer               InitialDirectTransfer,
    interSystemHandoverFailure          InterSystemHandoverFailure,
    measurementControlFailure           MeasurementControlFailure,
    measurementReport                   MeasurementReport,
    physicalChannelReconfigurationComplete
                                        PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                        PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete  RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure   RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete          RadioBearerReleaseComplete,
    radioBearerReleaseFailure           RadioBearerReleaseFailure,
    radioBearerSetupComplete            RadioBearerSetupComplete,
    radioBearerSetupFailure             RadioBearerSetupFailure,
    rrcConnectionReEstablishmentComplete
                                        RRCConnectionReEstablishmentComplete,
    rrcConnectionReleaseComplete        RRCConnectionReleaseComplete,
    rrcConnectionSetupComplete          RRCConnectionSetupComplete,
    rrcStatus                           RRCStatus,
    securityModeComplete                SecurityModeComplete,
    securityModeFailure                 SecurityModeFailure,
    signallingConnectionReleaseRequest  SignallingConnectionReleaseRequest,
    transportChannelReconfigurationComplete
                                        TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                        TransportChannelReconfigurationFailure,
```

```
    transportFormatCombinationControlFailure
                                        TransportFormatCombinationControlFailure,
    ueCapabilityInformation             UECapabilityInformation,
    uplinkDirectTransfer                UplinkDirectTransfer,
    utranMobilityInformationConfirm     UTRANMobilityInformationConfirm,
    utranMobilityInformationFailure     UTRANMobilityInformationFailure,
    extension                           NULL
}

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

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

DL-CCCH-MessageType ::= CHOICE {
    cellUpdateConfirm                   CellUpdateConfirm-CCCH,
    rrcConnectionReEstablishment        RRCConnectionReEstablishment-CCCH,
    rrcConnectionReject                 RRCConnectionReject,
    rrcConnectionRelease                RRCConnectionRelease-CCCH,
    rrcConnectionSetup                  RRCConnectionSetup,
    uraUpdateConfirm                    URAUpdateConfirm-CCCH,
    extension                           NULL
}

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

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

UL-CCCH-MessageType ::= CHOICE {
    cellUpdate                          CellUpdate,
    rrcConnectionReEstablishmentRequest RRCConnectionReEstablishmentRequest,
    rrcConnectionReleaseComplete        RRCConnectionReleaseComplete-CCCH,
    rrcConnectionRequest                RRCConnectionRequest,
    uraUpdate                           URAUpdate,
    extension                           NULL
}

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

PCCH-Message ::= SEQUENCE {
    message             PCCH-MessageType
}

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


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

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

BCCH-FACH-MessageType ::= CHOICE {
    systemInformation                   SystemInformation-FACH,
    systemInformationChangeIndication   SystemInformationChangeIndication,
    extension                           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

    CN-DomainIdentity,
    CN-InformationInfo,
    FlowIdentifier,
    NAS-Message,
    PagingRecordTypeID,
    ServiceDescriptor,
    SignallingFlowInfoList
FROM CoreNetwork-IEs

    URA-Identity
FROM UTRANMobility-IEs

    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CellUpdateCause,
    CipheringAlgorithm,
    CipheringModeInfo,
    DRX-Indicator,
    EstablishmentCause,
    FailureCauseWithProtErr,

    InitialUE-Identity,
    IntegrityProtActivationInfo,
```

```
    IntegrityProtectionModeInfo,
    PagingCause,
    PagingRecordList,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithInfo,
    Re-EstablishmentTimer,
    RedirectionInfo,
    RejectionCause,
    ReleaseCause,
    RRC-MessageTX-Count,
    SecurityCapability,
    START,
    STARTList,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    URA-UpdateCause,
    UTRAN-DRX-CycleLengthCoefficient,
    WaitTime
FROM UserEquipment-IEs

    PredefinedConfigIdentity,
    RAB-Info,
    RAB-Info-ShortPost,
    RAB-InformationReconfigList,
    RAB-InformationSetupList,
    RB-ActivationTimeInfo,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,
    RB-COUNT-C-MSB-InformationList,
    RB-IdentityList,
    RB-InformationAffectedList,
    RB-InformationReconfigList,
    RB-InformationReleaseList,
    RB-InformationSetupList,
    RB-WithPDCP-InfoList,
    SRB-InformationSetupList,
    SRB-InformationSetupList2
FROM RadioBearer-IEs

    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-CommonTransChInfo,
    DL-DeletedTransChInfoList,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-CommonTransChInfo,
    UL-DeletedTransChInfoList
FROM TransportChannel-IEs

    AllocationPeriodInfo,
    CCTrCH-PowerControlInfo,
    ConstantValue,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformationPost,
    DL-InformationPerRL,
    DL-InformationPerRL-List,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-DPCH-PowerControlInfo,
    DL-OuterLoopControl,
    DL-PDSCH-Information,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    IndividualTS-InterferenceList,
    MaxAllowedUL-TX-Power,
    PDSCH-CapacityAllocationInfo,
    PDSCH-Identity,
    PDSCH-Info,
    PRACH-RACH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-Identity,
    RL-AdditionInformationList,
    RL-RemovalInformationList,
    SSDT-Information,
    TFC-ControlDuration,
    TimeslotList,
    TX-DiversityMode,
    UL-ChannelRequirement,
```

```
    UL-DPCH-Info,
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-TimingAdvance,
    UL-TimingAdvanceControl
FROM PhysicalChannel-IEs

    AdditionalMeasurementID-List,
    EventResults,
    MeasuredResults,
    MeasuredResultsList,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementIdentityNumber,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList
FROM Measurement-IEs

    BCCH-ModificationInfo,
    CDMA2000-MessageList,
    GSM-MessageList,
    InterRAT-ChangeFailureCause,
    InterSystemHOInterRAT-HO-Failure,
    InterSystemMessage,
    ProtocolErrorInformation,
    SegCount,
    SegmentIndex,
    SFN-Prime,
    SIB-Data-fixed,
    SIB-Data-variable,
    SIB-Type
FROM Other-IEs

    maxSIBperMsg
FROM Constant-definitions;

-- **************************************************
--
-- ACTIVE SET UPDATE (FDD only)
--
-- **************************************************

ActiveSetUpdate ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          ActiveSetUpdate-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

ActiveSetUpdate-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        newU-RNTI                       U-RNTI                              OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        rl-AdditionInformationList      RL-AdditionInformationList          OPTIONAL,
        rl-RemovalInformationList       RL-RemovalInformationList           OPTIONAL,
        tx-DiversityMode                TX-DiversityMode                    OPTIONAL,
        ssdt-Information                SSDT-Information                    OPTIONAL
}

-- **************************************************
--
-- ACTIVE SET UPDATE COMPLETE (FDD only)
--
-- **************************************************

ActiveSetUpdateComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}
```

```
-- **************************************************
--
-- ACTIVE SET UPDATE FAILURE (FDD only)
--
-- **************************************************

ActiveSetUpdateFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- CELL CHANGE ORDER FROM UTRAN
--
-- **************************************************

CellChangeOrderFromUTRAN ::= CHOICE {
    v1                                  SEQUENCE {
        v1-IEs                              CellChangeOrderFromUTRAN-v1-IEs,
        nonCriticalExtensions               SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

CellChangeOrderFromUTRAN-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
        interRAT-TargetCellDescription  InterRAT-TargetCellDescription
-- ToDo
}

-- **************************************************
--
-- CELL CHANGE FAILURE FROM UTRAN
--
-- **************************************************

CellChangeFailureFromUTRAN ::= CHOICE {
    v1                                  SEQUENCE {
        v1-IEs                              CellChangeFailureFromUTRAN-v1-IEs,
        nonCriticalExtensions               SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

CellChangeFailureFromUTRAN-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        interRAT-ChangeFailureCause     InterRAT-ChangeFailureCause
}

-- **************************************************
--
-- CELL UPDATE
--
-- **************************************************

CellUpdate ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        startList       STARTList,
        am-RLC-ErrorIndicationC-plane   BOOLEAN,
        am-RLC-ErrorIndicationU-plane   BOOLEAN,
        cellUpdateCause                 CellUpdateCause,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
        -- TABULAR: Protocol error information is nested in
        -- ProtocolErrorIndicatorWithInfo.
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- CELL UPDATE CONFIRM
--
-- **************************************************

CellUpdateConfirm ::= CHOICE {
    v1                                  SEQUENCE {
```

```
        v1-IEs                          CellUpdateConfirm-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

CellUpdateConfirm-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-ResetIndicatorC-Plane       BOOLEAN,
        rlc-ResetIndicatorU-Plane       BOOLEAN,
 -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        prach-RACH-Info                 PRACH-RACH-Info                     OPTIONAL,
        dl-InformationPerRL             DL-InformationPerRL                 OPTIONAL
}

-- **************************************************
--
-- CELL UPDATE CONFIRM for CCCH
--
-- **************************************************

CellUpdateConfirm-CCCH ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        cellUpdateConfirm               CellUpdateConfirm
}


-- **************************************************
--
-- COUNTER CHECK
--
-- **************************************************

CounterCheck ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          CounterCheck-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

CounterCheck-v1-IEs ::= SEQUENCE {
    -- Radio bearer IEs
        rb-COUNT-C-MSB-InformationList  RB-COUNT-C-MSB-InformationList
}

-- **************************************************
--
-- COUNTER CHECK RESPONSE
--
-- **************************************************

CounterCheckResponse ::= SEQUENCE {
    -- Radio bearer IEs
        rb-COUNT-C-InformationList      RB-COUNT-C-InformationList          OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- DOWNLINK DIRECT TRANSFER
--
-- **************************************************

DownlinkDirectTransfer ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          DownlinkDirectTransfer-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
```

```
    criticalExtensions              SEQUENCE {}
}

DownlinkDirectTransfer-v1-IEs ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
        nas-Message                     NAS-Message
}

-- **************************************************
--
-- DOWNLINK OUTER LOOP CONTROL
--
-- **************************************************

DownlinkOuterLoopControl ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          DownlinkOuterLoopControl-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

DownlinkOuterLoopControl-v1-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-OuterLoopControl             DL-OuterLoopControl,
        dl-DPCH-PowerControlInfo        DL-DPCH-PowerControlInfo            OPTIONAL,
    -- Extension mechanism for non- release99 information
        criticalExtension               SEQUENCE {}                         OPTIONAL,
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

-- **************************************************
--
-- HANDOVER TO UTRAN COMMAND
--
-- **************************************************


HandoverToUTRANCommand ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          HandoverToUTRANCommand-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

HandoverToUTRANCommand-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        activationTime                  ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
        rab-Info                        RAB-Info-Short,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                re-EstablishmentTimer           Re-EstablishmentTimer,
                srb-InformationSetupList        SRB-InformationSetupList,
                rb-InformationSetupList         RB-InformationSetupList,
                rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
                ul-DPCH-Info                    UL-DPCH-Info,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        dl-PDSCH-Information            DL-PDSCH-Information OPTIONAL,
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation,
                dl-InformationPerRL-List        DL-InformationPerRL-List,
                frequencyInfo                   FrequencyInfo
            },
            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.
                predefinedConfigIdentity        PredefinedConfigIdentity,
                rab-Info                        RAB-Info-Post       OPTIONAL,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostFDD,
```

```
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL-List        DL-InformationPerRL-ListPostFDD,
                        frequencyInfo                   FrequencyInfoFDD
                    },
                    tdd                                 SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                        dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                        frequencyInfo                   FrequencyInfoTDD,
                        primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                    }

                }
            }
        },
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power
}

-- ************************************************
--
-- HANDOVER TO UTRAN COMPLETE
--
-- ************************************************

HandoverToUTRANComplete ::= SEQUENCE {
    --TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
    -- TABULAR: the IE below is conditional on history.
        startList                       STARTList                       OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- INITIAL DIRECT TRANSFER
--
-- ************************************************

InitialDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        serviceDescriptor               ServiceDescriptor,
        flowIdentifier                  FlowIdentifier,
        cn-DomainIdentity               CN-DomainIdentity,
        nas-Message                     NAS-Message,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- ~~INTER-SYSTEM~~ HANDOVER FROM UTRAN COMMAND
--
-- ************************************************

~~InterSystem~~HandoverFromUTRANCommand-GSM ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          ~~InterSystem~~HandoverFromUTRANCommand-GSM-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

~~InterSystem~~HandoverFromUTRANCommand-GSM-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        activationTime                  ActivationTime                  OPTIONAL,
    -- Radio bearer IEs
        remainingRAB-Info               RAB-Info                        OPTIONAL,
    -- Other IEs
        message-and-extension           CHOICE {
            gsm-Message                     SEQUENCE {},
            -- In this case, what follows the basic production is a variable length bit string
            -- with no length field, containing the GSM message including GSM padding up to end
            -- of container, to be analysed according to GSM specifications
            with-extension                  SEQUENCE {
                messages                        GSM-MessageList
            }
        }
}

~~InterSystem~~HandoverFromUTRANCommand-CDMA2000 ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          ~~InterSystem~~HandoverFromUTRANCommand-CDMA2000-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
```

```
    },
    criticalExtensions              SEQUENCE {}
}

InterSystemHandoverFromUTRANCommand-CDMA2000-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        activationTime                  ActivationTime                      OPTIONAL,
    -- Radio bearer IEs
        remainingRAB-Info               RAB-Info                            OPTIONAL,
    -- Other IEs
        cdma2000-MessageList            CDMA2000-MessageList
}

-- **************************************************
--
-- INTER-SYSTEM HANDOVER FROM UTRAN FAILURE
--
-- **************************************************

InterSystemHandoverFromUTRANFailure ::= SEQUENCE {
    -- Other IEs
        interSystemHOinterRAT-HO-Failure            InterSystemHOInterRAT-HO-Failure
    OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- MEASUREMENT CONTROL
--
-- **************************************************

MeasurementControl ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          MeasurementControl-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

MeasurementControl-v1-IEs ::= SEQUENCE {
    -- Measurement IEs
        measurementIdentityNumber       MeasurementIdentityNumber,
        measurementCommand              MeasurementCommand,
        -- TABULAR: The measurement type is included in MeasurementCommand.
        measurementReportingMode        MeasurementReportingMode            OPTIONAL,
        additionalMeasurementList       AdditionalMeasurementID-List        OPTIONAL,
    -- Physical channel IEs
        dpch-CompressedModeStatusInfo   DPCH-CompressedModeStatusInfo       OPTIONAL
}

-- **************************************************
--
-- MEASUREMENT CONTROL FAILURE
--
-- **************************************************

MeasurementControlFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- MEASUREMENT REPORT
--
-- **************************************************

MeasurementReport ::= SEQUENCE {
    -- Measurement IEs
        measurementIdentityNumber       MeasurementIdentityNumber,
        measuredResults                 MeasuredResults                     OPTIONAL,
        additionalMeasuredResults       MeasuredResultsList                 OPTIONAL,
        eventResults                    EventResults                        OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- PAGING TYPE 1
--
-- **************************************************
```

```
PagingType1 ::= SEQUENCE {
    -- User equipment IEs
        pagingRecordList                PagingRecordList                    OPTIONAL,
    -- Other IEs
        bcch-ModificationInfo           BCCH-ModificationInfo               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- PAGING TYPE 2
--
-- **************************************************

PagingType2 ::= SEQUENCE {
    -- User equipment IEs
        pagingCause                     PagingCause,
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
        pagingRecordTypeID              PagingRecordTypeID,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- PHYSICAL CHANNEL RECONFIGURATION
--
-- **************************************************

PhysicalChannelReconfiguration ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          PhysicalChannelReconfiguration-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

PhysicalChannelReconfiguration-v1-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,
        drx-Indicator                   DRX-Indicator,
        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
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        -- TABULAR: UL-ChannelRequirement contains the choice
        -- between UL DPCH info, PRACH info for RACH, CPCH SET info and CPCH set ID.
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information             DL-PDSCH-Information       OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- **************************************************
--
-- PHYSICAL CHANNEL RECONFIGURATION COMPLETE
--
-- **************************************************

PhysicalChannelReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
```

```
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- PHYSICAL CHANNEL RECONFIGURATION FAILURE
--
-- **************************************************

PhysicalChannelReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- PHYSICAL SHARED CHANNEL ALLOCATION (TDD only)
--
-- **************************************************

PhysicalSharedChannelAllocation ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          PhysicalSharedChannelAllocation-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

PhysicalSharedChannelAllocation-v1-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        c-RNTI                          C-RNTI                                  OPTIONAL,
    -- Physical channel IEs
        ul-TimingAdvance                UL-TimingAdvanceControl                 OPTIONAL,
        pusch-CapacityAllocationInfo    PUSCH-CapacityAllocationInfo            OPTIONAL,
        pdsch-CapacityAllocationInfo    PDSCH-CapacityAllocationInfo            OPTIONAL,
        confirmRequest                  ENUMERATED {
                                            confirmPDSCH, confirmPUSCH }        OPTIONAL,
        -- TABULAR: If the above value is not present, the default value "No Confirm"
        -- shall be used as specified in 10.2.23.
        iscpTimeslotList                    TimeslotList                            OPTIONAL
}

-- **************************************************
--
-- PUSCH CAPACITY REQUEST (TDD only)
--
-- **************************************************

PUSCHCapacityRequest ::= SEQUENCE {
    -- User equipment IEs
        c-RNTI                          C-RNTI                                  OPTIONAL,
    -- Measurement IEs
        trafficVolumeMeasuredResultsList
                                        TrafficVolumeMeasuredResultsList,
        timeslotListWithISCP            TimeslotListWithISCP                    OPTIONAL,
        primaryCCPCH-RSCP               PrimaryCCPCH-RSCP                       OPTIONAL,
        allocationConfirmation          CHOICE {
            pdschConfirmation               PDSCH-Identity,
            puschConfirmation               PUSCH-Identity
        }                                                                       OPTIONAL,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

RadioBearerReconfiguration ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RadioBearerReconfiguration-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RadioBearerReconfiguration-v1-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,
        drx-Indicator                   DRX-Indicator,
        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,
        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,
        dl-InformationPerRL-List        DL-InformationPerRL-List
}

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

RadioBearerReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

RadioBearerReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Radio bearer IEs
        potentiallySuccesfulBearerList  RB-IdentityList                     OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RADIO BEARER RELEASE
--
-- **************************************************

RadioBearerRelease ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RadioBearerRelease-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}
```

```
RadioBearerRelease-v1-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,
        drx-Indicator                   DRX-Indicator,
        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-InformationReleaseList       RB-InformationReleaseList,
        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,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- **************************************************
--
-- RADIO BEARER RELEASE COMPLETE
--
-- **************************************************

RadioBearerReleaseComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RADIO BEARER RELEASE FAILURE
--
-- **************************************************

RadioBearerReleaseFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Radio bearer IEs
        potentiallySuccesfulBearerList  RB-IdentityList                     OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RADIO BEARER SETUP
--
-- **************************************************

RadioBearerSetup ::= CHOICE {
```

```
    v1                              SEQUENCE {
        v1-IEs                          RadioBearerSetup-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RadioBearerSetup-v1-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,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
        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-AddReconfTransChInfoList         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,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- **************************************************
--
-- RADIO BEARER SETUP COMPLETE
--
-- **************************************************

RadioBearerSetupComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
        start               START                   OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RADIO BEARER SETUP FAILURE
--
-- **************************************************

RadioBearerSetupFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Radio bearer IEs
        potentiallySuccesfulBearerList  RB-IdentityList                     OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

```
--
-- RRC CONNECTION RE-ESTABLISHMENT
--
-- ************************************************

RRCConnectionReEstablishment ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionReEstablishment-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionReEstablishment-v1-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,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-ResetIndicatorC-plane       BOOLEAN,
        rlc-ResetIndicatorU-plane       BOOLEAN,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList          OPTIONAL,
        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
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         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,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- ************************************************
--
-- RRC CONNECTION RE-ESTABLISHMENT for CCCH
--
-- ************************************************

RRCConnectionReEstablishment-CCCH ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionReEstablishment-CCCH-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionReEstablishment-CCCH-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        rrcConnectionReEstablishment    RRCConnectionReEstablishment-v1-IEs
}

-- ************************************************
--
-- RRC CONNECTION RE-ESTABLISHMENT COMPLETE
--
-- ************************************************
```

```
RRCConnectionReEstablishmentComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
        start               START                   OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RRC CONNECTION RE-ESTABLISHMENT REQUEST
--
-- **************************************************

RRCConnectionReEstablishmentRequest ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        startList               STARTList,
        am-RLC-ErrorIndicationC-plane   BOOLEAN,
        am-RLC-ErrorIndicationU-plane   BOOLEAN,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
        -- TABULAR: The IE above is MD in tabular, but making a 2-way choice
        -- optional wastes one bit (using PER) and produces no additional
        -- information.
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RRC CONNECTION REJECT
--
-- **************************************************

RRCConnectionReject ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionReject-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionReject-v1-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        rejectionCause                  RejectionCause,
        waitTime                        WaitTime,
        redirectionInfo                 RedirectionInfo                     OPTIONAL
}

-- **************************************************
--
-- RRC CONNECTION RELEASE
--
-- **************************************************

RRCConnectionRelease::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionRelease-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionRelease-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-MessageTX-Count             RRC-MessageTX-Count                 OPTIONAL,
        -- The IE above is conditional on the UE state.
        releaseCause                    ReleaseCause
}

-- **************************************************
--
-- RRC CONNECTION RELEASE for CCCH
--
-- **************************************************
```

```
RRCConnectionRelease-CCCH::= CHOICE {
    v1                          SEQUENCE {
        v1-IEs                      RRCConnectionRelease-CCCH-v1-IEs,
        nonCriticalExtensions       SEQUENCE {}
    },
    criticalExtensions          SEQUENCE {}
}

RRCConnectionRelease-CCCH-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                      U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        rrcConnectionRelease        RRCConnectionRelease-v1-IEs
}

-- **************************************************
--
-- RRC CONNECTION RELEASE COMPLETE
--
-- **************************************************

RRCConnectionReleaseComplete ::= SEQUENCE {
    -- User equipment IEs
        errorIndication             FailureCauseWithProtErr             OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions       SEQUENCE {}
}

-- **************************************************
--
-- RRC CONNECTION RELEASE COMPLETE for CCCH
--
-- **************************************************

RRCConnectionReleaseComplete-CCCH ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                      U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        rrcConnectionReleaseComplete    RRCConnectionReleaseComplete
}

-- **************************************************
--
-- RRC CONNECTION REQUEST
--
-- **************************************************

RRCConnectionRequest ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        initialUE-Identity          InitialUE-Identity,
        establishmentCause          EstablishmentCause,
        protocolErrorIndicator      ProtocolErrorIndicator,
        -- The IE above is MD, but for compactness reasons no default value
        -- has been assigned to it.
    -- Measurement IEs
        measuredResultsOnRACH       MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions       SEQUENCE {}
}

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

RRCConnectionSetup::= CHOICE {
    v1                          SEQUENCE {
        v1-IEs                      RRCConnectionSetup-v1-IEs,
        nonCriticalExtensions       SEQUENCE {}
    },
    criticalExtensions          SEQUENCE {}
}

RRCConnectionSetup-v1-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        initialUE-Identity          InitialUE-Identity,
        activationTime              ActivationTime                      OPTIONAL,
        new-U-RNTI                  U-RNTI,
        new-c-RNTI                  C-RNTI                              OPTIONAL,
        utran-DRX-CycleLengthCoeff  UTRAN-DRX-CycleLengthCoefficient,
        capabilityUpdateRequirement CapabilityUpdateRequirement         OPTIONAL,
        -- TABULAR: If the IE is not present, the default value defined in 10.3.3.2 shall
        -- be used.
```

```
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList2,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

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

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
        ue-SystemSpecificCapability     InterSystemMessage                  OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RRC STATUS
--
-- **************************************************

RRCStatus ::= SEQUENCE {
    -- Other IEs
        protocolErrorInformation        ProtocolErrorInformation,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SecurityModeCommand ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          SecurityModeCommand-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

-- **************************************************
--
-- SECURITY MODE COMMAND
--
-- **************************************************

SecurityModeCommand-v1-IEs ::= SEQUENCE {
-- TABULAR: Integrity protection shall always be performed on this message.
    -- User equipment IEs
        securityCapability              SecurityCapability,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL
}

-- **************************************************
--
-- SECURITY MODE COMPLETE
--
-- **************************************************

SecurityModeComplete ::= SEQUENCE {
-- TABULAR: Integrity protection shall always be performed on this message.

    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfoList           OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- SECURITY MODE FAILURE
```

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

SecurityModeFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- SIGNALLING CONNECTION RELEASE
--
-- ************************************************

SignallingConnectionRelease::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          SignallingConnectionRelease-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

SignallingConnectionRelease-v1-IEs ::= SEQUENCE {
    -- Core network IEs
        signallingFlowInfoList          SignallingFlowInfoList
}

-- ************************************************
--
-- SIGNALLING CONNECTION RELEASE REQUEST
--
-- ************************************************

SignallingConnectionReleaseRequest ::= SEQUENCE {
    -- Core network IEs
        signallingFlowInfoList          SignallingFlowInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- SYSTEM INFORMATION for BCH
--
-- ************************************************

SystemInformation-BCH ::= SEQUENCE {
    -- Other information elements
        sfn-Prime                       SFN-Prime,
        payload                         CHOICE {
            noSegment                       NULL,
            firstSegment                    FirstSegment,
            subsequentSegment               SubsequentSegment,
            lastSegmentShort                        LastSegmentShort,
            lastAndFirst                    SEQUENCE {
                lastSegmentShort                        LastSegmentShort,
                firstSegment                    FirstSegmentShort
            },
            lastAndComplete                 SEQUENCE {
                completeSIB-List                CompleteSIB-List,
                lastSegment                     LastSegment
            },
            lastAndCompleteAndFirst         SEQUENCE {
                lastSegment                     LastSegment,
                completeSIB-List                CompleteSIB-List,
                firstSegment                    FirstSegmentShort
            },
            completeSIB-List                CompleteSIB-List,
            completeAndFirst                SEQUENCE {
                completeSIB-List                CompleteSIB-List,
                firstSegment                    FirstSegmentShort
            },
            completeSIB                     CompleteSIB,
            lastSegment                     LastSegment
        }
}

-- ************************************************
--
-- SYSTEM INFORMATION for FACH
--
-- ************************************************

SystemInformation-FACH ::= SEQUENCE {
```

```
    -- Other information elements
        payload                         CHOICE {
            noSegment                       NULL,
            firstSegment                    FirstSegment,
            subsequentSegment               SubsequentSegment,
            lastSegmentShort                        LastSegmentShort,
            lastAndFirst                    SEQUENCE {
                lastSegmentShort                        LastSegmentShort,
                firstSegment                    FirstSegmentShort
            },
            lastAndComplete                 SEQUENCE {
                completeSIB-List                CompleteSIB-List,
                lastSegment                     LastSegment
            },
            lastAndCompleteAndFirst         SEQUENCE {
                lastSegment                     LastSegment,
                completeSIB-List                CompleteSIB-List,
                firstSegment                    FirstSegmentShort
            },
            completeSIB-List                CompleteSIB-List,
            completeAndFirst                SEQUENCE {
                completeSIB-List                CompleteSIB-List,
                firstSegment                    FirstSegmentShort
            },
            completeSIB                     CompleteSIB,
            lastSegment                     LastSegment
        }
}

-- ************************************************
--
-- First segment
--
-- ************************************************

FirstSegment ::=                    SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        seg-Count                       SegCount,
        sib-Data-fixed                  SIB-Data-fixed
}

-- ************************************************
--
-- First segment (short)
--
-- ************************************************

FirstSegmentShort ::=               SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        seg-Count                       SegCount,
        sib-Data-variable               SIB-Data-variable
}

-- ************************************************
--
-- Subsequent segment
--
-- ************************************************

SubsequentSegment ::=               SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        segmentIndex                    SegmentIndex,
        sib-Data-fixed                  SIB-Data-fixed
}

-- ************************************************
--
-- Last segment
--
-- ************************************************

LastSegment ::=                     SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        segmentIndex                    SegmentIndex,
        sib-Data-fixed                  SIB-Data-fixed
    -- In case the SIB data is less than 222 bits, padding shall be used
    -- The same padding bits shall be used as defined in clause 12.1
}

LastSegmentShort ::=                        SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
```

```
        segmentIndex                    SegmentIndex,
        sib-Data-variable               SIB-Data-variable
}

-- ************************************************
--
-- Complete SIB
--
-- ************************************************

CompleteSIB-List ::=                SEQUENCE (SIZE (1..maxSIBperMsg)) OF
                                        CompleteSIBshort

CompleteSIB ::=                     SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        sib-Data-fixed                  SIB-Data-fixed
    -- In case the SIB data is less than 222 bits, padding shall be used
    -- The same padding bits shall be used as defined in clause 12.1
}

CompleteSIBshort ::=                        SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        sib-Data-variable               SIB-Data-variable
}

-- ************************************************
--
-- SYSTEM INFORMATION CHANGE INDICATION
--
-- ************************************************

SystemInformationChangeIndication ::=   SEQUENCE {
    -- Other IEs
        bcch-ModificationInfo               BCCH-ModificationInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- TRANSPORT CHANNEL RECONFIGURATION
--
-- ************************************************

TransportChannelReconfiguration::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          TransportChannelReconfiguration-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

TransportChannelReconfiguration-v1-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,
        drx-Indicator                   DRX-Indicator,
        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
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- 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,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- **************************************************
--
-- TRANSPORT CHANNEL RECONFIGURATION COMPLETE
--
-- **************************************************

TransportChannelReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- TRANSPORT CHANNEL RECONFIGURATION FAILURE
--
-- **************************************************

TransportChannelReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- TRANSPORT FORMAT COMBINATION CONTROL
--
-- **************************************************

TransportFormatCombinationControl ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message when transmitting this
message
    -- on the transparent mode signalling DCCH.
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            tfcs-ID                             TFCS-Identity   OPTIONAL
            }
    },
    dpch-TFCS-InUplink                  TFC-Subset,
    tfc-ControlDuration                 TFC-ControlDuration                 OPTIONAL,
    -- The information element is not included when transmitting the message
    -- on the transparent mode signalling DCCH and is optional otherwise
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- TRANSPORT FORMAT COMBINATION CONTROL FAILURE
--
-- **************************************************

TransportFormatCombinationControlFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- UE CAPABILITY ENQUIRY
--
-- **************************************************

UECapabilityEnquiry ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          UECapabilityEnquiry-v1-IEs,
```

```
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

UECapabilityEnquiry-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        capabilityUpdateRequirement     CapabilityUpdateRequirement
}

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

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-SystemSpecificCapability     InterSystemMessage                  OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

UECapabilityInformationConfirm ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          UECapabilityInformationConfirm-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

UECapabilityInformationConfirm-v1-IEs ::= SEQUENCE {
}

-- **************************************************
--
-- UPLINK DIRECT TRANSFER
--
-- **************************************************

UplinkDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        flowIdentifier                  FlowIdentifier,
        nas-Message                     NAS-Message,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- UPLINK PHYSICAL CHANNEL CONTROL
--
-- **************************************************

UplinkPhysicalChannelControl ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          UplinkPhysicalChannelControl-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}


UplinkPhysicalChannelControl-v1-IEs ::= SEQUENCE {
    -- Physical channel IEs
        ccTrCH-PowerControlInfo         CCTrCH-PowerControlInfo             OPTIONAL,
        timingAdvance                   UL-TimingAdvanceControl             OPTIONAL,
        prach-ConstantValue             ConstantValue                       OPTIONAL,
        pusch-ConstantValue             ConstantValue                       OPTIONAL
}

-- **************************************************
--
-- URA UPDATE
--
-- **************************************************
```

```
URAUpdate ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        ura-UpdateCause                 URA-UpdateCause,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- URA UPDATE CONFIRM
--
-- **************************************************

URAUpdateConfirm ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          URAUpdateConfirm-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

URAUpdateConfirm-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL
}

-- **************************************************
--
-- URA UPDATE CONFIRM for CCCH
--
-- **************************************************

URAUpdateConfirm-CCCH ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          URAUpdateConfirm-CCCH-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

URAUpdateConfirm-CCCH-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        uraUpdateConfirm                URAUpdateConfirm-v1-IEs
}

-- **************************************************
--
-- UTRAN MOBILITY INFORMATION
--
-- **************************************************

UTRANMobilityInformation ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

```
--
-- UTRAN MOBILITY INFORMATION CONFIRM
--
-- **************************************************

UTRANMobilityInformationConfirm ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- UTRAN MOBILITY INFORMATION FAILURE
--
-- **************************************************

UTRANMobilityInformationFailure ::= SEQUENCE {
    -- UE information elements
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

END
```

11.3.3 User equipment information elements

```
UserEquipment-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CN-DomainIdentity,
    IMEI,
    IMSI-GSM-MAP,
    LAI,
    P-TMSI-GSM-MAP,
    RAI,
    TMSI-GSM-MAP
FROM CoreNetwork-IEs

    RB-ActivationTimeInfoList
FROM RadioBearer-IEs

    FrequencyInfo,
    PowerControlAlgorithm,
    TGPSI
FROM PhysicalChannel-IEs

    InterSystemInfo
FROM Measurement-IEs

    ProtocolErrorInformation
FROM Other-IEs

    maxASC,
    maxCNdomains,
    maxDRACclasses,
    maxFrequencybands,
    maxPage1,
    maxSystemCapability
FROM Constant-definitions;


ActivationTime ::=                  INTEGER (0..255)
-- TABULAR : value 'now' always appear as default, and is encoded by absence of the field

BackoffControlParams ::=            SEQUENCE {
    n-AP-RetransMax                     N-AP-RetransMax,
    n-AccessFails                       N-AccessFails,
    nf-BO-NoAICH                        NF-BO-NoAICH,
    ns-BO-Busy                          NS-BO-Busy,
    nf-BO-AllBusy                       NF-BO-AllBusy,
    nf-BO-Mismatch                      NF-BO-Mismatch,
    t-CPCH                              T-CPCH
}

C-RNTI ::=                          BIT STRING (SIZE (16))

CapabilityUpdateRequirement ::=     SEQUENCE {
    ue-RadioCapabilityUpdateRequirement BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CellUpdateCause ::=                 ENUMERATED {
                                        cellReselection,
                                        periodicCellUpdate,
                                        ul-DataTransmission,
                                        pagingResponse,
                                        rb-ControlResponse,
                                        re-enteredServiceArea,
                                        spare1, spare2 }

ChipRateCapability ::=              ENUMERATED {
                                        mcps3-84, mcps1-28 }

CipheringAlgorithm ::=              ENUMERATED {
                                        uea0, uea1, spare1, spare2,
                                        spare3, spare4, spare5, spare6,
                                        spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14 }

CipheringModeCommand ::=            CHOICE {
    startRestart                        CipheringAlgorithm,
    stopCiphering                       NULL
}

CipheringModeInfo ::=               SEQUENCE {
    cipheringModeCommand                CipheringModeCommand,
```

```
    -- TABULAR: The ciphering algorithm is included in
    -- the CipheringModeCommand.
    activationTimeForDPCH              ActivationTime                    OPTIONAL,
    rb-DL-CiphActivationTimeInfo       RB-ActivationTimeInfoList         OPTIONAL
}

CN-DRX-CycleLengthCoefficient ::=   INTEGER (6..12)

CN-PagedUE-Identity ::=             CHOICE {
    imsi-GSM-MAP                       IMSI-GSM-MAP,
    tmsi-GSM-MAP                       TMSI-GSM-MAP,
    p-TMSI-GSM-MAP                     P-TMSI-GSM-MAP,
    imsi-DS-41                         IMSI-DS-41,
    tmsi-DS-41                         TMSI-DS-41,
    spare1                             NULL,
    spare2                             NULL,
    spare3                             NULL
}

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


CPCH-Parameters ::=                 SEQUENCE {
    initialPriorityDelayList           InitialPriorityDelayList          OPTIONAL,
    backoffControlParams               BackoffControlParams,
    powerControlAlgorithm              PowerControlAlgorithm,
    -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    dl-DPCCH-BER                       DL-DPCCH-BER
}

DL-DPCCH-BER ::=                    INTEGER (0..63)

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

DL-PhysChCapabilityTDD ::=          SEQUENCE {
    maxSimultaneousCCTrCH-Count        MaxSimultaneousCCTrCH-Count,
    maxTS-PerFrame                     MaxTS-PerFrame,
    maxPhysChPerFrame                  MaxPhysChPerFrame,
    minimumSF                          MinimumSF-DL,
    supportOfPDSCH                     BOOLEAN,
    maxPhysChPerTS                     MaxPhysChPerTS
}

DL-TransChCapability ::=            SEQUENCE {
    maxNoBitsReceived                  MaxNoBits,
    maxConvCodeBitsReceived            MaxNoBits,
    turboDecodingSupport               TurboSupport,
    maxSimultaneousTransChs            MaxSimultaneousTransChsDL,
    maxReceivedTransportBlocks         MaxTransportBlocksDL,
    maxNumberOfTFC-InTFCS              MaxNumberOfTFC-InTFCS-DL,
    maxNumberOfTF                      MaxNumberOfTF
}

DRAC-SysInfo ::=                    SEQUENCE {
    transmissionProbability            TransmissionProbability,
    maximumBitRate                     MaximumBitRate
}

DRAC-SysInfoList ::=                SEQUENCE (SIZE (1..maxDRACclasses)) OF
                                       DRAC-SysInfo

DRX-Indicator ::=                   ENUMERATED {
                                       noDRX,
                                       drxWithCellUpdating,
                                       drxWithURA-Updating,
                                       spare1 }

ESN-DS-41 ::=                       BIT STRING (SIZE (32))

EstablishmentCause ::=              ENUMERATED {
                                       originatingConversationalCall,
```

```
                                    originatingStreamingCall,
                                    originatingInteractiveCall,
                                    originatingBackgroundCall,
                                    originatingSubscribedTrafficCall,
                                    terminatingConversationalCall,
                                    terminatingStreamingCall,
                                    terminatingInteractiveCall,
                                    terminatingBackgroundCall,
                                    emergencyCall,
                                    interSystemCellReselectioninterRAT-CellReselection,
                                    interRAT-CellChangeOrder,
                                    registration,
                                    detach,
                                    sms,
                                    callRe-establishment,
                                    spare1, spare2, spare3, spare4,
                                    spare5, spare6, spare7, spare8,
                                    spare9, spare10, spare11, spare12,
                                    spare13, spare14, spare15, spare16,
                                    spare17 }

FailureCauseWithProtErr ::=         CHOICE {
    configurationUnsupported            NULL,
    physicalChannelFailure              NULL,
    incompatibleSimultaneousReconfiguration
                                        NULL,
    compressedModeRuntimeError          TGPSI,
    protocolError                       ProtocolErrorInformation,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

GSM-Measurements ::=                SEQUENCE {
    gsm900                              BOOLEAN,
    dcs1800                             BOOLEAN,
    gsm1900                             BOOLEAN
}


ICS-Version ::=                     ENUMERATED {
                                        r99,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7 }

IMSI-and-ESN-DS-41 ::=              SEQUENCE {
    imsi-DS-41                          IMSI-DS-41,
    esn-DS-41                           ESN-DS-41
}

IMSI-DS-41 ::=                      OCTET STRING (SIZE (5..7))

InitialPriorityDelayList ::=        SEQUENCE (SIZE (maxASC)) OF
                                        NS-IP

InitialUE-Identity ::=              CHOICE {
    imsi                                IMSI-GSM-MAP,
    tmsi-and-LAI                        TMSI-and-LAI-GSM-MAP,
    p-TMSI-and-RAI                      P-TMSI-and-RAI-GSM-MAP,
    imei                                IMEI,
    esn-DS-41                           ESN-DS-41,
    imsi-DS-41                          IMSI-DS-41,
    imsi-and-ESN-DS-41                  IMSI-and-ESN-DS-41,
    tmsi-DS-41                          TMSI-DS-41,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL,
    spare5                              NULL,
    spare6                              NULL,
    spare7                              NULL,
    spare8                              NULL
}

IntegrityCheckInfo ::=              SEQUENCE {
    messageAuthenticationCode           MessageAuthenticationCode,
    rrc-MessageSequenceNumber           RRC-MessageSequenceNumber
}

IntegrityProtActivationInfo ::=     SEQUENCE {
    rrc-MessageSequenceNumberList       RRC-MessageSequenceNumberList
}

IntegrityProtectionAlgorithm ::=    ENUMERATED {
                                        uia1, spare1, spare2, spare3,
                                        spare4, spare5, spare6, spare7,
```

```
                                    spare8, spare9, spare10, spare11,
                                    spare12, spare13, spare14, spare15 }


IntegrityProtectionModeCommand ::=  CHOICE {
    startIntegrityProtection            SEQUENCE {
        integrityProtInitNumber             IntegrityProtInitNumber
    },
    modify                              SEQUENCE {
        dl-IntegrityProtActivationInfo      IntegrityProtActivationInfo
    },
    spare1                              NULL,
    spare2                              NULL
}

IntegrityProtectionModeInfo ::=     SEQUENCE {
    integrityProtectionModeCommand      IntegrityProtectionModeCommand,
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialization number have been nested inside
    -- IntegrityProtectionModeCommand.
    integrityProtectionAlgorithm        IntegrityProtectionAlgorithm        OPTIONAL
}

IntegrityProtInitNumber ::=         BIT STRING (SIZE (32))

LCS-Capability ::=                  SEQUENCE {
    standaloneLocMethodsSupported       BOOLEAN,
    ue-BasedOTDOA-Supported             BOOLEAN,
    networkAssistedGPS-Supported        NetworkAssistedGPS-Supported,
    gps-ReferenceTimeCapable            BOOLEAN,
    supportForIDL                       BOOLEAN
}


MaxHcContextSpace ::=                   ENUMERATED  {
                                            by512, by1024, by2048, by4096,
                                            by8192, spare1, spare2, spare3 }


MaximumAM-EntityNumberRLC-Cap ::=   ENUMERATED {
                                        am3, am4, am5, am6,
                                        am8, am16, am32, spare1 }

-- Actual value = IE value * 16
MaximumBitRate ::=                  INTEGER (0..32)


MaximumRLC-WindowSize ::=           ENUMERATED { mws2047, mws4095 }

MaxNoDPDCH-BitsTransmitted ::=      ENUMERATED {
                                        b600, b1200, b2400, b4800,
                                        b9600, b19200, b28800, b38400,
                                        b48000, b57600, spare1, spare2,
                                        spare3, spare4, spare5, spare6 }

MaxNoBits ::=                       ENUMERATED {
                                        b640, b1280, b2560, b3840, b5120,
                                        b6400, b7680, b8960, b10240,
                                        b20480, b40960, b81920, b163840,
                                        spare1, spare2, spare3 }


MaxNoPhysChBitsReceived ::=         ENUMERATED {
                                        b600, b1200, b2400, b3600,
                                        b4800, b7200, b9600, b14400,
                                        b19200, b28800, b38400, b48000,
                                        b57600, b67200, b76800, spare1 }

MaxNoSCCPCH-RL ::=                  ENUMERATED {
                                        rl1, spare1, spare2, spare3,
                                        spare4, spare5, spare6, spare7 }

MaxNumberOfTF ::=                   ENUMERATED {
                                        tf32, tf64, tf128, tf256,
                                        tf512, tf1024, spare1, spare2 }

MaxNumberOfTFC-InTFCS-DL ::=        ENUMERATED {
                                        tfc16, tfc32, tfc48, tfc64, tfc96,
                                        tfc128, tfc256, tfc512, tfc1024,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7 }

MaxNumberOfTFC-InTFCS-UL ::=        ENUMERATED {
                                        tfc4, tfc8, tfc16, tfc32, tfc48, tfc64,
                                        tfc96, tfc128, tfc256, tfc512, tfc1024,
                                        spare1, spare2, spare3, spare4,
```

```
                                        spare5 }


-- TABULAR: Used range in Release99 is 1..224, values 225-256 are spare values
MaxPhysChPerFrame ::=               INTEGER (1..256)

MaxPhysChPerTimeslot ::=            ENUMERATED {
                                        ts1, ts2 }


MaxPhysChPerTS ::=                  INTEGER (1..16)

MaxSimultaneousCCTrCH-Count ::=     INTEGER (1..8)

MaxSimultaneousTransChsDL ::=       ENUMERATED {
                                        e4, e8, e16, e32 }

MaxSimultaneousTransChsUL ::=       ENUMERATED {
                                        e2, e4, e8, e16, e32,
                                        spare1, spare2, spare3 }

MaxTransportBlocksDL ::=            ENUMERATED {
                                        tb4, tb8, tb16, tb32, tb48,
                                        tb64, tb96, tb128, tb256, tb512,
                                        spare1, spare2, spare3,
                                        spare4, spare5, spare6 }

MaxTransportBlocksUL ::=            ENUMERATED {
                                        tb2, tb4, tb8, tb16, tb32, tb48,
                                        tb64, tb96, tb128, tb256, tb512,
                                        spare1, spare2, spare3,
                                        spare4, spare5 }

-- TABULAR: Used range in Release99 is 1..14
MaxTS-PerFrame ::=                  INTEGER (1..16)

-- TABULAR: This IE contains dependencies to UE-MultiModeRAT-Capability,
-- the conditional fields have been left mandatory for now.
MeasurementCapability ::=           SEQUENCE {
    downlinkCompressedMode              CompressedModeMeasCapability,
    uplinkCompressedMode                CompressedModeMeasCapability
}

MessageAuthenticationCode ::=       BIT STRING (SIZE (32))

MinimumSF-DL ::=                    ENUMERATED {
                                        sf1, sf16 }

MinimumSF-UL ::=                    ENUMERATED {
                                        sf1, sf2, sf4, sf8, sf16,
                                        spare1, spare2, spare3 }

MultiModeCapability ::=             ENUMERATED {
                                        tdd, fdd, fdd-tdd }


MultiRAT-Capability ::=             SEQUENCE {
    supportOfGSM                        BOOLEAN,
    supportOfMulticarrier               BOOLEAN
}


N-300 ::=                           INTEGER (0..7)

N-301 ::=                           INTEGER (0..7)

N-302 ::=                           INTEGER (0..7)

N-303 ::=                           INTEGER (0..7)

N-304 ::=                           INTEGER (0..7)

N-310 ::=                           INTEGER (0..7)

N-312 ::=                           ENUMERATED {
                                        s1, s50, s100, s200, s400,
                                        s600, s800, s1000 }


N-313 ::=                           ENUMERATED {
                                        s1, s2, s4, s10, s20,
                                         s50, s100, s200 }

N-315 ::=                           ENUMERATED {
                                        s1, s50, s100, s200, s400,
                                        s600, s800, s1000 }
```

```
N-AccessFails ::=                   INTEGER (1..64)

N-AP-RetransMax ::=                 INTEGER (1..64)

NetworkAssistedGPS-Supported ::=    ENUMERATED {
                                        networkBased,
                                        ue-Based,
                                        bothNetworkAndUE-Based,
                                        noNetworkAssistedGPS }

NF-BO-AllBusy ::=                   INTEGER (0..31)

NF-BO-NoAICH ::=                    INTEGER (0..31)

NF-BO-Mismatch ::=                  INTEGER (0..127)

NS-BO-Busy ::=                      INTEGER (0..63)

NS-IP ::=                           INTEGER (0..28)

P-TMSI-and-RAI-GSM-MAP ::=          SEQUENCE {
    p-TMSI                              P-TMSI-GSM-MAP,
    rai                                 RAI
}


PagingCause ::=                     ENUMERATED {
                                        terminatingConversationalCall,
                                        terminatingStreamingCall,
                                        terminatingInteractiveCall,
                                        terminatingBackgroundCall,
                                        sms,
                                        spare1, spare2, spare3 }

PagingRecord ::=                    CHOICE {
    cn-Page                             SEQUENCE {
        pagingCause                         PagingCause,
        cn-DomainIdentity                   CN-DomainIdentity,
        cn-pagedUE-Identity                 CN-PagedUE-Identity
    },
    utran-Page                          U-RNTI
        pagingCause                         PagingCause,
        cn-DomainIdentity                   CN-DomainIdentity,

    }
}

PagingRecordList ::=                SEQUENCE (SIZE (1..maxPage1)) OF
                                        PagingRecord


PDCP-Capability ::=                 SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    supportForRfc2507                   CHOICE {
        notSupported                        NULL,
        supported                           MaxHcContextSpace
    }
}

PhysicalChannelCapability ::=       SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
        },
        tdd                                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }
    }
}

ProtocolErrorCause ::=              ENUMERATED {
                                        asn1-ViolationOrEncodingError,
                                        messageTypeNonexistent,
                                        messageNotCompatibleWithReceiverState,
                                        ie-ValueNotComprehended,
                                        conditionalInformationElementError,
                                        messageExtensionNotComprehended,
                                        spare1, spare2 }

ProtocolErrorIndicator ::=          ENUMERATED {
                                        noError, errorOccurred }

ProtocolErrorIndicatorWithInfo ::= CHOICE {
```

```
    noError                             NULL,
    errorOccurred                       ProtocolErrorInformation
}

RadioFrequencyBand ::=              ENUMERATED {
                                        a, b, c,
                                        spare1 }

RadioFrequencyBandList ::=          SEQUENCE (SIZE (1..maxFrequencybands)) OF
                                        RadioFrequencyBand


Re-EstablishmentTimer ::=           CHOICE {
    t-314                               T-314Value,
    t-315                               T-315Value
}

RedirectionInfo ::=                 CHOICE {
    frequencyInfo                       FrequencyInfo,
    interSystemInfo                     InterSystemInfo,
    spare                               NULL
}

RejectionCause ::=                  ENUMERATED {
                                        congestion,
                                        unspecified,
                                        spare1, spare2 }


ReleaseCause ::=                    ENUMERATED {
                                        normalEvent,
                                        unspecified,
                                        pre-emptiveRelease,
                                        congestion,
                                        re-establishmentReject,
    directedsignallingconnectionre-establishment,
        userInactivity,
                                        spare1, spare2, spare3,
                                        spare4, spare5, spare6,
                                        spare7, spare8, spare9 }

RF-Capability ::=                   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
            ue-PowerClass                   UE-PowerClass,
            txRxFrequencySeparation         TxRxFrequencySeparation
        },
        tdd                         SEQUENCE {
            ue-PowerClass               UE-PowerClass,
            radioFrequencyBandList      RadioFrequencyBandList,
            chipRateCapability          ChipRateCapability
        }
    }
}


RLC-Capability ::=                  SEQUENCE {
    totalRLC-AM-BufferSize              TotalRLC-AM-BufferSize,
    maximumRLC-WindowSize               MaximumRLC-WindowSize,
    maximumAM-EntityNumber              MaximumAM-EntityNumberRLC-Cap
}

RRC-MessageSequenceNumber ::=       INTEGER (0..15)


RRC-MessageSequenceNumberList ::=   SEQUENCE (SIZE (4..5)) OF
                                        RRC-MessageSequenceNumber

RRC-MessageTX-Count ::=             INTEGER (1..8)

S-RNTI ::=                          BIT STRING (SIZE (20))

S-RNTI-2 ::=                        INTEGER (0..1023)

SecurityCapability ::=              SEQUENCE {
    cipheringAlgorithmCap                   BIT STRING (SIZE (16)),
    integrityProtectionAlgorithmCap     BIT STRING (SIZE (16))
}


SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported                        NULL,
    supported                           SEQUENCE {
        maxNoSCCPCH-RL                      MaxNoSCCPCH-RL,
        simultaneousSCCPCH-DPCH-DPDCH-Reception
                                            BOOLEAN
```

```
        -- The IE above is applicable only if IE Support of PDSCH = TRUE
    }
}

SRNC-Identity ::=                   BIT STRING (SIZE (12))


START ::=               BIT STRING (SIZE (20))

STARTList ::=                       SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        STARTSingle


STARTSingle ::=                     SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    startValue                          START
}

SystemSpecificCapUpdateReq ::=      ENUMERATED {
                                        gsm, spare1, spare2, spare3,
                                        spare4, spare5, spare6, spare7,
                                        spare8, spare9, spare10, spare11,
                                        spare12, spare13, spare14, spare15 }

SystemSpecificCapUpdateReqList ::= SEQUENCE (SIZE (1..maxSystemCapability)) OF
                                        SystemSpecificCapUpdateReq


T-300 ::=                           ENUMERATED {
                                        ms100, ms200, ms400, ms600, ms800,
                                        ms1000, ms1200, ms1400, ms1600,
                                        ms1800, ms2000, ms3000, ms4000,
                                        ms6000, ms8000 }


T-301 ::=                           ENUMERATED {
                                        ms100, ms200, ms400, ms600, ms800,
                                        ms1000, ms1200, ms1400, ms1600,
                                        ms1800, ms2000, ms3000, ms4000,
                                        ms6000, ms8000 }


T-302 ::=                           ENUMERATED {
                                        ms100, ms200, ms400, ms600, ms800,
                                        ms1000, ms1200, ms1400, ms1600,
                                        ms1800, ms2000, ms3000, ms4000,
                                        ms6000, ms8000 }


T-303 ::=                           ENUMERATED {
                                        ms100, ms200, ms400, ms600, ms800,
                                        ms1000, ms1200, ms1400, ms1600,
                                        ms1800, ms2000, ms3000, ms4000,
                                        ms6000, ms8000 }

T-304 ::=                           ENUMERATED {
                                        ms100, ms200, ms400,
                                        ms1000, ms2000,
                                        spare1, spare2, spare3 }

T-305 ::=                           ENUMERATED {
                                        noUpdate, m5, m10, m30,
                                        m60, m120, m360, m720 }

T-306 ::=                           ENUMERATED {
                                        noUpdate, m5, m10, m30,
                                        m60, m120, m360, m720 }

T-307 ::=                           ENUMERATED {
                                        s5, s10, s15, s20,
                                        s30, s40, s50, spare1 }

T-308 ::=                           ENUMERATED {
                                        ms40, ms80, ms160, ms320 }

T-309 ::=                           INTEGER (1..8)

T-310 ::=                           ENUMERATED {
                                        ms40, ms80, ms120, ms160,
                                        ms200, ms240, ms280, ms320 }

T-311 ::=                           ENUMERATED {
                                        ms250, ms500, ms750, ms1000,
                                        ms1250, ms1500, ms1750, ms2000 }

T-312 ::=                           INTEGER (0..15)
```

```
T-313 ::=                           INTEGER (0..15)


T-314 ::=                           ENUMERATED {
                                        s0, s2, s4, s6, s8,
                                        s12, s16, s20 }


T-314Value ::=                      SEQUENCE {
    t-314                               T-314                               OPTIONAL
}


T-315 ::=                           ENUMERATED {
                                        s0, s10, s30, s60, s180,
                                        s600, s1200, s1800 }


T-315Value ::=                      SEQUENCE {
    t-315                               T-315                               OPTIONAL
}

T-CPCH ::=                          ENUMERATED {
                                        ct0, ct1 }

TMSI-and-LAI-GSM-MAP ::=            SEQUENCE {
    tmsi                                TMSI-GSM-MAP,
    lai                                 LAI
}

TMSI-DS-41 ::=                      OCTET STRING (SIZE (2..12))

TotalRLC-AM-BufferSize ::=          ENUMERATED {
                                        kb2, kb10, kb50, kb100,
                                        kb150, kb500, kb1000,
                                        spare1 }

-- Actual value = IE value * 0.125
TransmissionProbability ::=         INTEGER (1..8)

TransportChannelCapability ::=      SEQUENCE {
    dl-TransChCapability                DL-TransChCapability,
    ul-TransChCapability                UL-TransChCapability
}

TurboSupport ::=                    CHOICE {
    notSupported                        NULL,
    supported                           MaxNoBits
}

TxRxFrequencySeparation ::=         ENUMERATED {
                                        mhz190, mhz174-8-205-2,
                                        mhz134-8-245-2, spare1 }

U-RNTI ::=                          SEQUENCE {
    srnc-Identity                       SRNC-Identity,
    s-RNTI                              S-RNTI
}

U-RNTI-Short ::=                    SEQUENCE {
    srnc-Identity                       SRNC-Identity,
    s-RNTI-2                            S-RNTI-2
}


UE-ConnTimersAndConstants ::=       SEQUENCE {
-- Optional is used also for parameters for which the default value is the last one read in SIB1
    t-301                               T-301                                DEFAULT ms2000,
    n-301                               N-301                                DEFAULT 2,
    t-302                               T-302                                DEFAULT ms4000,
    n-302                               N-302                                DEFAULT 3,
    t-303                               T-303                                DEFAULT ms2000,
    n-303                               N-303                                DEFAULT 3,
    t-304                               T-304                                OPTIONAL,
    n-304                               N-304                                OPTIONAL,
    t-305                               T-305                                DEFAULT m30,
    t-306                               T-306                                DEFAULT m30,
    t-307                               T-307                                DEFAULT s30,
    t-308                               T-308                                OPTIONAL,
    t-309                               T-309                                OPTIONAL,
    t-310                               T-310                                DEFAULT ms160,
    n-310                               N-310                                DEFAULT 4,
    t-311                               T-311                                DEFAULT ms2000,
    t-312                               T-312                                DEFAULT 1,
    n-312                               N-312                                DEFAULT s1,
```

```
    t-313                               T-313                               OPTIONAL,
    n-313                               N-313                               OPTIONAL,
    t-314                               T-314                               OPTIONAL,
    t-315                               T-315                               OPTIONAL,
    n-315                               N-315                               OPTIONAL
}


UE-DCHTimersAndConstants ::=        SEQUENCE {
    t-304                               T-304                               DEFAULT ms2000,
    n-304                               N-304                               DEFAULT 2,
    t-308                               T-308                               DEFAULT ms160,
    t-309                               T-309                               DEFAULT 5,
    t-310                               T-310                               OPTIONAL,
    n-310                               N-310                               OPTIONAL,
    t-311                               T-311                               OPTIONAL,
    t-313                               T-313                               DEFAULT 3,
    n-313                               N-313                               DEFAULT s20,
    t-314                               T-314                               DEFAULT s12,
    t-315                               T-315                               DEFAULT s180,
    n-315                               N-315                               DEFAULT s1
}

UE-IdleTimersAndConstants ::=       SEQUENCE {
    t-300                               T-300,
    n-300                               N-300,
    t-312                               T-312,
    n-312                               N-312
}

UE-MultiModeRAT-Capability ::=      SEQUENCE {
    multiRAT-CapabilityList             MultiRAT-Capability,
    multiModeCapability                 MultiModeCapability
}

UE-PowerClass ::=                   INTEGER (1..4)

UE-RadioAccessCapability ::=        SEQUENCE {
    ics-Version                         ICS-Version,
    pdcp-Capability                     PDCP-Capability,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability,
    physicalChannelCapability           PhysicalChannelCapability,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    lcs-Capability                      LCS-Capability,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            measurementCapability               MeasurementCapability
        },
        tdd                                 NULL
    }
}

UL-PhysChCapabilityFDD ::=          SEQUENCE {
    maxNoDPDCH-BitsTransmitted          MaxNoDPDCH-BitsTransmitted,
    supportOfPCPCH                      BOOLEAN
}

UL-PhysChCapabilityTDD ::=          SEQUENCE {
    maxSimultaneousCCTrCH-Count         MaxSimultaneousCCTrCH-Count,
    maxTS-PerFrame                      MaxTS-PerFrame,
    maxPhysChPerTimeslot                MaxPhysChPerTimeslot,
    minimumSF                           MinimumSF-UL,
    supportOfPUSCH                      BOOLEAN
}

UL-TransChCapability ::=            SEQUENCE {
    maxNoBitsTransmitted                MaxNoBits,
    maxConvCodeBitsTransmitted          MaxNoBits,
    turboDecodingSupport                TurboSupport,
    maxSimultaneousTransChs             MaxSimultaneousTransChsUL,
    maxTransmittedBlocks                MaxTransportBlocksUL,
    maxNumberOfTFC-InTFCS               MaxNumberOfTFC-InTFCS-UL,
    maxNumberOfTF                       MaxNumberOfTF
}

URA-UpdateCause ::=                 ENUMERATED {
                                        changeOfURA,
                                        periodicURAUpdate,
                                        re-enteredServiceArea,
                                        spare1, spare2, spare3,
                                        spare4, spare5 }

UTRAN-DRX-CycleLengthCoefficient ::= INTEGER (3..12)
```

```
WaitTime ::=                    INTEGER (0..15)

END
```

11.3.4 Radio bearer information elements

```
RadioBearer-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CN-DomainIdentity,
    NAS-Synchronization-Indicator,
    RAB-Identity
FROM CoreNetwork-IEs

    Re-EstablishmentTimer
FROM UserEquipment-IEs

    PreDefTransChConfiguration,
    TransportChannelIdentity
FROM TransportChannel-IEs

    PreDefPhyChConfiguration
FROM PhysicalChannel-IEs

    maxLoCHperRLC,
    maxPDCPAlgoType,
    maxRABsetup,
    maxRB,
    maxRBallRABs,
    maxRBMuxOptions,
    maxRBperRAB,
    maxSRBsetup
FROM Constant-definitions;


AlgorithmSpecificInfo ::=           CHOICE {
    rfc2507-Info                        RFC2507-Info,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL,
    spare5                              NULL,
    spare6                              NULL,
    spare7                              NULL
}


-- Upper limit is 2^32 - 1
COUNT-C ::=                         INTEGER (0..4294967295)


-- Upper limit is 2^25 - 1
COUNT-C-MSB ::=                     INTEGER (0..33554431)


DL-AM-RLC-Mode ::=                  SEQUENCE {
    inSequenceDelivery                  BOOLEAN,
    receivingWindowSize                 ReceivingWindowSize,
    dl-RLC-StatusInfo                   DL-RLC-StatusInfo
}


DL-LogicalChannelMapping ::=        SEQUENCE {
    -- TABULAR: DL-TransportChannelType contains TransportChannelIdentity as well.
    dl-TransportChannelType             DL-TransportChannelType,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL
}

DL-LogicalChannelMappingList ::=    SEQUENCE (SIZE (1..maxLoCHperRLC)) OF
                                        DL-LogicalChannelMapping


DL-RLC-Mode ::=                     CHOICE {
    dl-AM-RLC-Mode                      DL-AM-RLC-Mode,
    dl-UM-RLC-Mode                      NULL,
    dl-TM-RLC-Mode                      DL-TM-RLC-Mode,
    spare                               NULL
}

DL-RLC-StatusInfo ::=               SEQUENCE {
    timerStatusProhibit                 TimerStatusProhibit                 OPTIONAL,
    timerEPC                            TimerEPC                            OPTIONAL,
    missingPU-Indicator                 BOOLEAN,
    timerStatusPeriodic                 TimerStatusPeriodic                 OPTIONAL
}
```

```
DL-TM-RLC-Mode ::=                  SEQUENCE {
    segmentationIndication                  BOOLEAN
}


DL-TransportChannelType ::=         CHOICE {
    dch                                 TransportChannelIdentity,
    fach                                NULL,
    dsch                                TransportChannelIdentity
}

ExpectReordering ::=                ENUMERATED {
                                        reorderingNotExpected,
                                        reorderingExpected }

ExplicitDiscard ::=                 SEQUENCE {
    timerMRW                            TimerMRW,
    timerDiscard                        TimerDiscard,
    maxMRW                              MaxMRW
}

HeaderCompressionInfo ::=           SEQUENCE {
    algorithmSpecificInfo               AlgorithmSpecificInfo
}

HeaderCompressionInfoList ::=       SEQUENCE (SIZE (1..maxPDCPAlgoType)) OF
                                        HeaderCompressionInfo


LogicalChannelIdentity ::=          INTEGER (1..15)


LogicalChannelMaxLoss ::=           ENUMERATED {
                                        lcm0, lcm5, lcm10, lcm15, lcm20, lcm25,
                                        lcm30, lcm35, lcm40, lcm45, lcm50, lcm55,
                                        lcm60, lcm65, lcm70, lcm75, lcm80, lcm85,
                                        lcm90, lcm95, lcm100 }


LosslessSRNS-RelocSupport ::=       CHOICE {
    supported                           MaxPDCP-SN,
    notSupported                        NULL
}

MAC-LogicalChannelPriority ::=      INTEGER (1..8)

MaxDAT ::=                          ENUMERATED {
                                        dat1, dat2, dat3, dat4, dat5, dat6,
                                        dat7, dat8, dat9, dat10, dat15, dat20,
                                        dat25, dat30, dat35, dat40 }


MaxDAT-Retransmissions ::=          SEQUENCE {
    maxDAT                              MaxDAT,
    timerMRW                            TimerMRW,
    maxMRW                              MaxMRW
}

MaxMRW ::=                          ENUMERATED {
                                        mm1, mm4, mm6, mm8, mm12, mm16,
                                        mm24, mm32, spare1, spare2, spare3,
                                        spare4, spare5, spare6, spare7, spare8 }


MaxPDCP-SN ::=                      ENUMERATED {
                                        sn255, sn65535 }

MaxRST ::=                          ENUMERATED {
                                        rst1, rst4, rst6, rst8, rst12,
                                        rst16, rst24, rst32,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8 }


NoExplicitDiscard ::=               ENUMERATED {
                                        dt10, dt20, dt30, dt40, dt50,
                                        dt60, dt70, dt80, dt90, dt100 }


PDCP-Info ::=                       SEQUENCE {
    losslessSRNS-RelocSupport           LosslessSRNS-RelocSupport           OPTIONAL,
    pdcp-PDU-Header                     PDCP-PDU-Header,
    -- TABULAR: The IE above is MD in the tabular format and it can be encoded
    -- in one bit, so the OPTIONAL is removed for compactness.
    headerCompressionInfoList           HeaderCompressionInfoList           OPTIONAL
```

```
}

PDCP-InfoReconfig ::=               SEQUENCE {
    pdcp-Info                           PDCP-Info,
    pdcp-SN-Info                        PDCP-SN-Info
}

PDCP-PDU-Header ::=                 ENUMERATED {
                                        present, absent }

PDCP-SN-Info ::=                    INTEGER (0..65535)

Poll-PU ::=                         ENUMERATED {
                                        pu1, pu2, pu4, pu8, pu16,
                                        pu32, pu64, pu128,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8 }

Poll-SDU ::=                        ENUMERATED {
                                        sdu1, sdu4, sdu16, sdu64,
                                        spare1, spare2, spare3, spare4 }

PollingInfo ::=                     SEQUENCE {
    timerPollProhibit                   TimerPollProhibit                   OPTIONAL,
    timerPoll                           TimerPoll                           OPTIONAL,
    poll-PU                             Poll-PU                             OPTIONAL,
    poll-SDU                            Poll-SDU                            OPTIONAL,
    lastTransmissionPU-Poll             BOOLEAN,
    lastRetransmissionPU-Poll           BOOLEAN,
    pollWindow                          PollWindow                          OPTIONAL,
    timerPollPeriodic                   TimerPollPeriodic                   OPTIONAL
}

PollWindow ::=                      ENUMERATED {
                                        pw50, pw60, pw70, pw80, pw85,
                                        pw90, pw95, pw99,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8 }

PredefinedConfigIdentity ::=        INTEGER (0..15)

PredefinedConfigValueTag ::=        INTEGER (0..15)


PredefinedRB-Configuration ::=      SEQUENCE {
    srb-InformationList                 SRB-InformationSetupList,
    rb-InformationList                  RB-InformationSetupList
}


PreDefRadioConfiguration ::=        SEQUENCE {
    -- User equipment IEs
    re-EstablishmentTimer               Re-EstablishmentTimer,
    -- Radio bearer IEs
    predefinedRB-Configuration          PredefinedRB-Configuration,
    -- Transport channel IEs
    preDefTransChConfiguration          PreDefTransChConfiguration,
    -- Physical channel IEs
    preDefPhyChConfiguration            PreDefPhyChConfiguration
}


RAB-Info ::=                        SEQUENCE {
    rab-Identity                        RAB-Identity,
    cn-DomainIdentity                   CN-DomainIdentity,
    re-EstablishmentTimer               Re-EstablishmentTimer
}

RAB-InformationReconfigList ::=     SEQUENCE (SIZE (1.. maxRABsetup)) OF
                                        RAB-InformationReconfig

RAB-InformationReconfig ::=         SEQUENCE {
    rab-Identity                        RAB-Identity,
    nas-Synchronization-Indicator       NAS-Synchronization-Indicator
}


RAB-Info-~~Short~~ Post ::=                 SEQUENCE {
    rab-Identity                        RAB-Identity,
    cn-DomainIdentity                   CN-DomainIdentity
    nas-Synchronization-Indicator       NAS-Synchronization-Indicator   OPTIONAL
}


RAB-InformationSetup ::=            SEQUENCE {
    rab-Info                            RAB-Info,
```

```
    nas-Synchronization-Indicator       NAS-Synchronization-Indicator   OPTIONAL,
    rb-InformationSetupList             RB-InformationSetupList
}

RAB-InformationSetupList ::=        SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-InformationSetup

RB-ActivationTimeInfo ::=           SEQUENCE {
    rb-Identity                         RB-Identity,
    rlc-SequenceNumber                  RLC-SequenceNumber
}

RB-ActivationTimeInfoList ::=       SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-ActivationTimeInfo


RB-COUNT-C-Information ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    count-C-UL                          COUNT-C,
    count-C-DL                          COUNT-C
}


RB-COUNT-C-InformationList ::=      SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                        RB-COUNT-C-Information


RB-COUNT-C-MSB-Information ::=      SEQUENCE {
    rb-Identity                         RB-Identity,
    count-C-MSB-UL                      COUNT-C-MSB,
    count-C-MSB-DL                      COUNT-C-MSB
}


RB-COUNT-C-MSB-InformationList ::=  SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                        RB-COUNT-C-MSB-Information

RB-Identity ::=                     INTEGER (0..31)


RB-IdentityList ::=                 SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-Identity

RB-InformationAffected ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    rb-MappingInfo                      RB-MappingInfo
}

RB-InformationAffectedList ::=      SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationAffected


RB-InformationReconfig ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig                   OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice                      OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo                      OPTIONAL,
    rb-SuspendResume                    RB-SuspendResume                    OPTIONAL
}

RB-InformationReconfigList ::=      SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationReconfig

RB-InformationReleaseList ::=       SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-Identity


RB-InformationSetup ::=             SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info                           OPTIONAL,
    rlc-Info                            RLC-Info,
    rb-MappingInfo                      RB-MappingInfo
}

RB-InformationSetupList ::=         SEQUENCE (SIZE (1..maxRBperRAB)) OF
                                        RB-InformationSetup

RB-MappingInfo ::=                  SEQUENCE (SIZE (1..maxRBMuxOptions)) OF
                                        RB-MappingOption


RB-MappingOption ::=                SEQUENCE {
    ul-LogicalChannelMappings           UL-LogicalChannelMappings           OPTIONAL,
    dl-LogicalChannelMappingList        DL-LogicalChannelMappingList        OPTIONAL
}

RB-SuspendResume ::=                ENUMERATED {
```

```
                                    suspend, resume }

RB-WithPDCP-Info ::=                SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-SN-Info                        PDCP-SN-Info
}

RB-WithPDCP-InfoList ::=            SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                        RB-WithPDCP-Info


ReceivingWindowSize ::=             ENUMERATED {
                                        rw1, rw8, rw16, rw32, rw64, rw128, rw256,
                                        rw512, rw768, rw1024, rw1536, rw2047,
                                        rw2560, rw3072, rw3584, rw4095 }


RFC2507-Info ::=                    SEQUENCE {
    f-MAX-PERIOD                        INTEGER (1..65535)                  DEFAULT 256,
    f-MAX-TIME                          INTEGER (1..255)                    DEFAULT 5,
    max-HEADER                          INTEGER (60..65535)                 DEFAULT 168,
    tcp-SPACE                           INTEGER (3..255)                    DEFAULT 15,
    non-TCP-SPACE                       INTEGER (3..65535)                  DEFAULT 15,
    expectReordering                    ExpectReordering
    -- TABULAR: The IE above has only two possible values, so using Optional or Default
    -- would be wasteful
}

RLC-Info ::=                        SEQUENCE {
    ul-RLC-Mode                         UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode                         DL-RLC-Mode                         OPTIONAL
}

RLC-InfoChoice ::=                  CHOICE {
    rlc-Info                            RLC-Info,
    spare                               NULL
}

RLC-SequenceNumber ::=              INTEGER (0..4095)


SRB-InformationSetup ::=            SEQUENCE {
    rb-Identity                         RB-Identity                         OPTIONAL,
    -- The default value for the IE above is the smallest value not used yet.
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}

SRB-InformationSetupList ::=        SEQUENCE (SIZE (1..maxSRBsetup)) OF
                                        SRB-InformationSetup


SRB-InformationSetupList2 ::=       SEQUENCE (SIZE (3..4)) OF
                                        SRB-InformationSetup

TimerDiscard ::=                    ENUMERATED {
                                        td0-1, td0-25, td0-5, td0-75,
                                        td1, td1-25, td1-5, td1-75,
                                        td2, td2-5, td3, td3-5, td4,
                                        td4-5, td5, td7-5 }


TimerEPC ::=                        ENUMERATED {
                                        te50, te60, te70, te80, te90,
                                        te100, te120, te140, te160, te180,
                                        te200, te300, te400, te500, te700,
                                        te900, spare1, spare2, spare3,
                                        spare4, spare5, spare6, spare7,
                                        spare8, spare9, spare10, spare11,
                                        spare12, spare13, spare14, spare15,
                                        spare16 }


TimerMRW ::=                        ENUMERATED {
                                        te50, te60, te70, te80, te90, te100,
                                        te120, te140, te160, te180, te200,
                                        te300, te400, te500, te700, te900,
                                        spare1, spare2, spare3, spare4, spare5,
                                        spare6, spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14,
                                        spare15, spare16 }


TimerPoll ::=                       ENUMERATED {
                                        tp10, tp20, tp30, tp40, tp50,
                                        tp60, tp70, tp80, tp90, tp100,
```

```
                                    tp110, tp120, tp130, tp140, tp150,
                                    tp160, tp170, tp180, tp190, tp200,
                                    tp210, tp220, tp230, tp240, tp250,
                                    tp260, tp270, tp280, tp290, tp300,
                                    tp310, tp320, tp330, tp340, tp350,
                                    tp360, tp370, tp380, tp390, tp400,
                                    tp410, tp420, tp430, tp440, tp450,
                                    tp460, tp470, tp480, tp490, tp500,
                                    tp510, tp520, tp530, tp540, tp550,
                                    tp600, tp650, tp700, tp750, tp800,
                                    tp850, tp900, tp950, tp1000,

                                    spare1, spare2, spare3, spare4, spare5,
                                    spare6, spare7, spare8, spare9, spare10,
                                    spare11, spare12, spare13, spare14,
                                    spare15, spare16 }

TimerPollPeriodic ::=               ENUMERATED {
                                    tper100, tper200, tper300, tper400,
                                    tper500, tper750, tper1000, tper2000,
                                    spare1, spare2, spare3, spare4,
                                    spare5, spare6, spare7, spare8 }


TimerPollProhibit ::=               ENUMERATED {
                                    tpp10, tpp20, tpp30, tpp40, tpp50,
                                    tpp60, tpp70, tpp80, tpp90, tpp100,
                                    tpp110, tpp120, tpp130, tpp140, tpp150,
                                    tpp160, tpp170, tpp180, tpp190, tpp200,
                                    tpp210, tpp220, tpp230, tpp240, tpp250,
                                    tpp260, tpp270, tpp280, tpp290, tpp300,
                                    tpp310, tpp320, tpp330, tpp340, tpp350,
                                    tpp360, tpp370, tpp380, tpp390, tpp400,
                                    tpp410, tpp420, tpp430, tpp440, tpp450,
                                    tpp460, tpp470, tpp480, tpp490, tpp500,
                                    tpp510, tpp520, tpp530, tpp540, tpp550,
                                    tpp600, tpp650, tpp700, tpp750, tpp800,
                                    tpp850, tpp900, tpp950, tpp1000,
                                    spare1, spare2, spare3, spare4, spare5,
                                    spare6, spare7, spare8, spare9, spare10,
                                    spare11, spare12, spare13, spare14,
                                    spare15, spare16 }

TimerRST ::=                        ENUMERATED {
                                    tr50, tr100, tr150, tr200, tr250, tr300,
                                    tr350, tr400, tr450, tr500, tr550,
                                    tr600, tr700, tr800, tr900, tr1000,
                                    spare1, spare2, spare3, spare4, spare5,
                                    spare6, spare7, spare8, spare9, spare10,
                                    spare11, spare12, spare13, spare14,
                                    spare15, spare16 }

TimerStatusPeriodic ::=             ENUMERATED {
                                    tsp100, tsp200, tsp300, tsp400, tsp500,
                                    tsp750, tsp1000, tsp2000 }


TimerStatusProhibit ::=             ENUMERATED {
                                    tsp10,tsp20,tsp30,tsp40,tsp50,
                                    tsp60,tsp70,tsp80,tsp90,tsp100,
                                    tsp110,tsp120,tsp130,tsp140,tsp150,
                                    tsp160,tsp170,tsp180,tsp190,tsp200,
                                    tsp210,tsp220,tsp230,tsp240,tsp250,
                                    tsp260,tsp270,tsp280,tsp290,tsp300,
                                    tsp310,tsp320,tsp330,tsp340,tsp350,
                                    tsp360,tsp370,tsp380,tsp390,tsp400,
                                    tsp410,tsp420,tsp430,tsp440,tsp450,
                                    tsp460,tsp470,tsp480,tsp490,tsp500,
                                    tsp510,tsp520,tsp530,tsp540,tsp550,
                                    tsp600,tsp650,tsp700,tsp750,tsp800,
                                    tsp850,tsp900,tsp950,tsp1000,
                                    spare1, spare2, spare3, spare4, spare5,
                                    spare6, spare7, spare8, spare9, spare10,
                                    spare11, spare12, spare13, spare14,
                                    spare15, spare16 }


TransmissionRLC-Discard ::=         CHOICE {
    timerBasedExplicit                  ExplicitDiscard,
    timerBasedNoExplicit                NoExplicitDiscard,
    maxDAT-Retransmissions              MaxDAT-Retransmissions,
    noDiscard                           MaxDAT
}


TransmissionWindowSize ::=          ENUMERATED {
```

```
                                    tw1, tw8, tw16, tw32, tw64, tw128, tw256,
                                    tw512, tw768, tw1024, tw1536, tw2047,
                                    tw2560, tw3072, tw3584, tw4095 }


UL-AM-RLC-Mode ::=                  SEQUENCE {
    transmissionRLC-Discard             TransmissionRLC-Discard,
    transmissionWindowSize              TransmissionWindowSize,
    timerRST                            TimerRST,
    max-RST                             MaxRST,
    pollingInfo                         PollingInfo
}


UL-LogicalChannelMapping ::=        SEQUENCE {
    -- TABULAR: UL-TransportChannelType contains TransportChannelIdentity as well.
    ul-TransportChannelType             UL-TransportChannelType,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL,
    mac-LogicalChannelPriority          MAC-LogicalChannelPriority,
    logicalChannelMaxLoss               LogicalChannelMaxLoss               DEFAULT lcm0
}



UL-LogicalChannelMappingList ::=    SEQUENCE {
    rlc-LogicalChannelMappingIndicator  BOOLEAN,
    ul-LogicalChannelMapping            SEQUENCE (SIZE (maxLoCHperRLC)) OF
                                        UL-LogicalChannelMapping
}

UL-LogicalChannelMappings ::=       CHOICE {
    oneLogicalChannel                   UL-LogicalChannelMapping,
    twoLogicalChannels                  UL-LogicalChannelMappingList
}


UL-RLC-Mode ::=                     CHOICE {
    ul-AM-RLC-Mode                      UL-AM-RLC-Mode,
    ul-UM-RLC-Mode                      UL-UM-RLC-Mode,
    ul-TM-RLC-Mode                      UL-TM-RLC-Mode,
    spare                               NULL
}


UL-TM-RLC-Mode ::=                  SEQUENCE {
    transmissionRLC-Discard             TransmissionRLC-Discard             OPTIONAL,
    segmentationIndication              BOOLEAN
}

UL-UM-RLC-Mode ::=                  SEQUENCE {
    transmissionRLC-Discard             TransmissionRLC-Discard             OPTIONAL

}

UL-TransportChannelType ::=         CHOICE {
    dch                                 TransportChannelIdentity,
    rach                                NULL,
    cpch                                NULL,
    usch                                NULL
}

END
```

11.3.7 Measurement information elements

```
Measurement-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CellIdentity
FROM UTRANMobility-IEs

    UTRAN-DRX-CycleLengthCoefficient
FROM UserEquipment-IEs

    RB-Identity
FROM RadioBearer-IEs

    TFCS-IdentityPlain,
    TransportChannelIdentity
FROM TransportChannel-IEs

    BurstType,
    CellParametersID,
    FrequencyInfo,
    MaxAllowedUL-TX-Power,
    PrimaryCCPCH-Info,
    PrimaryCCPCH-TX-Power,
    PrimaryCPICH-Info,
    PrimaryCPICH-TX-Power,
    TimeslotNumber,
    UL-TimingAdvance
FROM PhysicalChannel-IEs

    BSIC
FROM Other-IEs

    maxAdditionalMeas,
    maxCCTrCH,
    maxCellMeas,
    maxCellMeas-1,
    maxFreq,
    maxMeasEvent,
    maxMeasParEvent,
    maxOtherRAT,
    maxRB,
    maxRL,
    maxRL-1,
    maxSat,
    maxTrCH,
    maxTS
FROM Constant-definitions;

AcquisitionSatInfo ::=              SEQUENCE {
    satID                               SatID,
    doppler0thOrder                     INTEGER (-2048..2047),
    extraDopplerInfo                    ExtraDopplerInfo                    OPTIONAL,
    codePhase                           INTEGER (0..1022),
    integerCodePhase                    INTEGER (0..19),
    gps-BitNumber                       INTEGER (0..3),
    codePhaseSearchWindow               CodePhaseSearchWindow,
    azimuthAndElevation                 AzimuthAndElevation                 OPTIONAL
}

AcquisitionSatInfoList ::=          SEQUENCE (SIZE (1..maxSat)) OF
                                        AcquisitionSatInfo

AdditionalAssistanceData ::=        OCTET STRING (SIZE (1..38))

AdditionalMeasurementID-List ::=    SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasurementIdentityNumber


AlmanacSatInfo ::=                  SEQUENCE {
    satID                               SatID,
    e                                   BIT STRING (SIZE (16)),
    t-oa                                BIT STRING (SIZE (8)),
    deltaI                              BIT STRING (SIZE (16)),
    omegaDot                            BIT STRING (SIZE (16)),
    satHealth                           BIT STRING (SIZE (8)),
    a-Sqrt                              BIT STRING (SIZE (24)),
    omega0                              BIT STRING (SIZE (24)),
    m0                                  BIT STRING (SIZE (24)),
    omega                               BIT STRING (SIZE (24)),
    af0                                 BIT STRING (SIZE (11)),
    af1                                 BIT STRING (SIZE (11))
```

```
}

AlmanacSatInfoList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        AlmanacSatInfo

AverageRLC-BufferPayload ::=        ENUMERATED {
                                        pla0, pla4, pla8, pla16, pla32,
                                        pla64, pla128, pla256, pla512,
                                        pla1024, pla2k, pla4k, pla8k, pla16k,
                                        pla32k, pla64k, pla128k, pla256k,
                                        pla512k, pla1024k }

AzimuthAndElevation ::=             SEQUENCE {
    azimuth                             INTEGER (0..31),
    elevation                           INTEGER (0..7)
}

BadSatList ::=                      SEQUENCE (SIZE (1..maxSat)) OF
                                        INTEGER (0..63)

BCCH-ARFCN ::=                      INTEGER (0..1023)

BLER-MeasurementResults ::=         SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    dl-TransportChannelBLER             DL-TransportChannelBLER             OPTIONAL
}

BLER-MeasurementResultsList ::=     SEQUENCE (SIZE (1..maxTrCH)) OF
                                        BLER-MeasurementResults

BLER-TransChIdList ::=              SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity


BSIC-VerificationRequired ::=       ENUMERATED {
                                        required, notRequired }


BurstModeParameters ::=             SEQUENCE {
    burstStart                          INTEGER (0..15),
    burstLength                         INTEGER (10..25),
    burstFreq                           INTEGER (1..16)
}



CellDCH-ReportCriteria ::=          CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

-- Actual value = IE value * 0.5
CellIndividualOffset ::=            INTEGER (-20..20)


CellInfo ::=                        SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    }
}


CellInfoSI-RSCP ::=                 SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
```

```
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-RSCP        OPTIONAL
}

CellInfoSI-ECN0 ::=                 SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-ECN0    OPTIONAL
}

CellInfoSI-HCS-RSCP ::=             SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-RSCP    OPTIONAL
}

CellInfoSI-HCS-ECN0 ::=             SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-ECN0    OPTIONAL
}

CellMeasuredResults ::=             SEQUENCE {
    cellIdentity                        CellIdentity                        OPTIONAL,
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    cfn-SFN-ObsTimeDifference           CFN-SFN-ObsTimeDifference           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            cpich-Ec-N0                         CPICH-Ec-N0                 OPTIONAL,
            cpich-RSCP                          CPICH-RSCP                  OPTIONAL,
            pathloss                            Pathloss                    OPTIONAL
        },
        tdd                                 SEQUENCE {
            cellParametersID                    CellParametersID,
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP           OPTIONAL,
            timeslotISCP-List                   TimeslotISCP-List           OPTIONAL
        }
    }
}

CellMeasurementEventResults ::=     CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCPICH-Info,
```

```
    tdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCCPCH-Info
}

CellPosition ::=                    SEQUENCE {
    relativeNorth                       INTEGER (-32767..32767),
    relativeEast                        INTEGER (-32767..32767),
    relativeAltitude                    INTEGER (-4095..4095)
}


CellReportingQuantities ::=         SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    cellIdentity                        BOOLEAN,
    cfn-SFN-ObsTimeDifference           BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            cpich-Ec-N0                         BOOLEAN,
            cpich-RSCP                          BOOLEAN,
            pathloss                            BOOLEAN
        },
        tdd                                 SEQUENCE {
            timeslotISCP                        BOOLEAN,
            primaryCCPCH-RSCP                   BOOLEAN,
            pathloss                            BOOLEAN
        }
    }
}


CellSelectReselectInfoSIB-11-12-RSCP ::=    SEQUENCE {
    q-OffsetS-N                     Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                   OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-ECN0 ::=    SEQUENCE {
    q-Offset1S-N                        Q-OffsetS-N                     DEFAULT 0,
    q-Offset2S-N                        Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                   OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-HCS-RSCP ::=    SEQUENCE {
    q-OffsetS-N                     Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    hcs-NeighbouringCellInformation-RSCP        HCS-NeighbouringCellInformation-RSCP
    OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                   OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        }
    }
}
--???
CellSelectReselectInfoSIB-11-12-HCS-ECN0 ::=    SEQUENCE {
    q-Offset1S-N                        Q-OffsetS-N                     DEFAULT 0,
    q-Offset2S-N                        Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    hcs-NeighbouringCellInformation-ECN0        HCS-NeighbouringCellInformation-ECN0
    OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                   OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
```

```
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        }
    }
}

CellToMeasure ::=                   SEQUENCE {
    sfn-sfn-Drift                       INTEGER (0..30)                     OPTIONAL,
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    sfn-SFN-ObservedTimeDifference      SFN-SFN-ObsTimeDifference1,
    fineSFN-SFN                         FineSFN-SFN,
    cellPosition                        CellPosition                        OPTIONAL
}

CellToMeasureInfoList ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellToMeasure

CellToReport ::=                    SEQUENCE {
    frequency                           Frequency,
    bsic                                BSIC
}

CellToReportList ::=                SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellToReport


CFN-SFN-ObsTimeDifference ::=       CHOICE {
    fdd-ChipDiff                        INTEGER (0..157286399),
    tdd-FrameDiff                       INTEGER (0..4095)
}

CodePhaseSearchWindow ::=           ENUMERATED {
                                        w1023, w1, w2, w3, w4, w6, w8,
                                        w12, w16, w24, w32, w48, w64,
                                        w96, w128, w192 }

CPICH-Ec-N0 ::=                     INTEGER (-20..0)

-- IE value 0 = <-24 dB, 1 = between -24 and -23 and so on
CPICH-Ec-N0-OTDOA ::=               INTEGER (0..26)

CPICH-RSCP ::=                      INTEGER (-115..-40)


DeltaPRC ::=                        INTEGER (-127..127)

DeltaRRC ::=                        INTEGER (-7..7)

DGPS-CorrectionSatInfo ::=          SEQUENCE {
    satID                               SatID,
    iode                                BIT STRING (SIZE (8)),
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
    deltaPRC2                           DeltaPRC,
    deltaRRC2                           DeltaRRC,
    deltaPRC3                           DeltaPRC,
    deltaRRC3                           DeltaRRC
}

DGPS-CorrectionSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-CorrectionSatInfo

DGPS-Information ::=                SEQUENCE {
    satID                               SatID,
    iode                                IODE,
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
    deltaPRC2                           DeltaPRC,
    deltaRRC2                           DeltaRRC
}

DGPS-InformationList ::=            SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-Information

DiffCorrectionStatus ::=            ENUMERATED {
                                        udre-1-0, udre-0-75, udre-0-5, udre-0-3,
                                        udre-0-2, udre-0-1, noData, invalidData }


-- Actual value = IE value * 0.02
DL-PhysicalChannelBER ::=           INTEGER (0..255)

-- Actual value = IE value * 0.02
```

```
DL-TransportChannelBLER ::=         INTEGER (0..255)

DopplerUncertainty ::=              ENUMERATED {
                                        hz12-5, hz25, hz50, hz100, hz200 }

EllipsoidPoint ::=                  OCTET STRING (SIZE (7))

EllipsoidPointAltitude ::=          OCTET STRING (SIZE (9))

EllipsoidPointAltitudeEllipse ::=   OCTET STRING (SIZE (14))

EllipsoidPointUncertCircle ::=      OCTET STRING (SIZE (8))

EllipsoidPointUncertEllipse ::=     OCTET STRING (SIZE (11))

EnvironmentCharacterization ::=     ENUMERATED {
                                        possibleHeavyMultipathNLOS,
                                        lightMultipathLOS,
                                        notDefined }


Event1a ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold
}


Event1b ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W
}


Event1c ::=                         SEQUENCE {
    replacementActivationThreshold      ReplacementActivationThreshold
}


Event1ef ::=                        SEQUENCE {
    triggeringCondition                 TriggeringCondition,
    thresholdUsedFrequency              ThresholdUsedFrequency
}


Event2a ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}


Event2b ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}


Event2c ::=                         SEQUENCE {
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}


Event2d ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
```

```
    hysteresis                      HysteresisInterFreq,
    timeToTrigger                   TimeToTrigger,
    reportingAmount                 ReportingAmount,
    reportingInterval               ReportingInterval,
    reportingCellStatus             ReportingCellStatus             OPTIONAL
}


Event2e ::=                         SEQUENCE {
    hysteresis                      HysteresisInterFreq,
    timeToTrigger                   TimeToTrigger,
    reportingAmount                 ReportingAmount,
    reportingInterval               ReportingInterval,
    reportingCellStatus             ReportingCellStatus             OPTIONAL,
    nonUsedFreqParameterList        NonUsedFreqParameterList        OPTIONAL
}


Event2f ::=                         SEQUENCE {
    usedFreqThreshold               Threshold,
    usedFreqW                       W,
    hysteresis                      HysteresisInterFreq,
    timeToTrigger                   TimeToTrigger,
    reportingAmount                 ReportingAmount,
    reportingInterval               ReportingInterval,
    reportingCellStatus             ReportingCellStatus             OPTIONAL
}


Event3a ::=                         SEQUENCE {
    thresholdOwnSystem              Threshold,
    w                               W,
    thresholdOtherSystem            Threshold,
    hysteresis                      Hysteresis,
    timeToTrigger                   TimeToTrigger,
    reportingAmount                 ReportingAmount,
    reportingInterval               ReportingInterval,
    reportingCellStatus             ReportingCellStatus             OPTIONAL
}


Event3b ::=                         SEQUENCE {
    thresholdOtherSystem            Threshold,
    hysteresis                      Hysteresis,
    timeToTrigger                   TimeToTrigger,
    reportingAmount                 ReportingAmount,
    reportingInterval               ReportingInterval,
    reportingCellStatus             ReportingCellStatus             OPTIONAL

}


Event3c ::=                         SEQUENCE {
    thresholdOtherSystem            Threshold,
    hysteresis                      Hysteresis,
    timeToTrigger                   TimeToTrigger,
    reportingAmount                 ReportingAmount,
    reportingInterval               ReportingInterval,
    reportingCellStatus             ReportingCellStatus             OPTIONAL

}


Event3d ::=                         SEQUENCE {
    hysteresis                      Hysteresis,
    timeToTrigger                   TimeToTrigger,
    reportingAmount                 ReportingAmount,
    reportingInterval               ReportingInterval,
    reportingCellStatus             ReportingCellStatus             OPTIONAL

}

EventIDInterFreq ::=                ENUMERATED {
                                        e2a, e2b, e2c, e2d, e2e, e2f }

EventIDInterSystem ::=              ENUMERATED {
                                        e3a, e3b, e3c, e3d }


EventIDIntraFreq ::=                ENUMERATED {
                                        e1a, e1b, e1c, e1d, e1e,
                                        e1f, e1g, e1h, e1i }

EventResults ::=                    CHOICE {
    intraFreqEventResults           IntraFreqEventResults,
    interFreqEventResults           InterFreqEventResults,
```

```
    interSystemEventResults             InterSystemEventResults,
    trafficVolumeEventResults           TrafficVolumeEventResults,
    qualityEventResults                 QualityEventResults,
    ue-InternalEventResults             UE-InternalEventResults,
    lcs-MeasurementEventResults         LCS-MeasurementEventResults
}

ExtraDopplerInfo ::=                SEQUENCE {
    doppler1stOrder                     INTEGER (-42..21),
    dopplerUncertainty                  DopplerUncertainty
}


FACH-MeasurementOccasionInfo ::=    SEQUENCE {
    k-UTRA                              UTRAN-DRX-CycleLengthCoefficient,
    otherRAT-InSysInfoList              OtherRAT-InSysInfoList              OPTIONAL
}


FilterCoefficient ::=               ENUMERATED {
                                        fc0, fc1, fc2, fc3, fc4, fc5,
                                        fc6, fc7, fc8, fc9, fc11, fc13,
                                        fc15, fc17, fc19, spare1 }

FineSFN-SFN ::=                     ENUMERATED {
                                        fs0, fs0-25, fs0-5, fs0-75 }

ForbiddenAffectCell ::=             CHOICE {
    fdd                                 PrimaryCPICH-Info,
    tdd                                 PrimaryCCPCH-Info
}

ForbiddenAffectCellList ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell

FreqQualityEstimateQuantity-FDD ::= ENUMERATED {
                                        cpich-Ec-N0,
                                        cpich-RSCP }

FreqQualityEstimateQuantity-TDD ::= ENUMERATED {
                                        primaryCCPCH-RSCP }

-- **TODO**, not defined yet
Frequency ::=                       SEQUENCE {
}

GSM-CarrierRSSI ::=                 BIT STRING (SIZE (6))

GPS-MeasurementParam ::=            SEQUENCE {
    satelliteID                         INTEGER (0..63),
    c-N0                                INTEGER (0..63),
    doppler                             INTEGER (-32768..32768),
    wholeGPS-Chips                      INTEGER (0..1023),
    fractionalGPS-Chips                 INTEGER (0..1023),
    multipathIndicator                  MultipathIndicator,
    pseudorangeRMS-Error                INTEGER (0..63)
}

GPS-MeasurementParamList ::=        SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-MeasurementParam

-- **TODO**, not defined yet
GSM-OutputPower ::=                 SEQUENCE {
}


GPS-TOW-1msec ::=                   INTEGER (0..604799999)


GPS-TOW-1usec ::=                   SEQUENCE {
    tow-1msec                           GPS-TOW-1msec,
    tow-rem-usec                        GPS-TOW-rem-usec
}

GPS-TOW-Assist ::=                  SEQUENCE {
    satID                               SatID,
    tlm-Message                         BIT STRING (SIZE (14)),
    antiSpoof                           BOOLEAN,
    alert                               BOOLEAN,
    tlm-Reserved                        BIT STRING (SIZE (2))
}

GPS-TOW-AssistList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-TOW-Assist
```

```
GPS-TOW-rem-usec ::=                INTEGER (0..999)

HCS-CellReselectInformation-RSCP ::=        SEQUENCE {
    penaltyTime                                 PenaltyTime-RSCP
    -- TABULAR: The default value is "notUsed", temporary offset is nested inside PenaltyTime
}

HCS-CellReselectInformation-ECN0 ::=        SEQUENCE {
    penaltyTime                             PenaltyTime-ECN0
    -- TABULAR: The default value is "notUsed", temporary offset is nested inside PenaltyTime
}

HCS-NeighbouringCellInformation-RSCP ::= SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    hcs-CellReselectInformation         HCS-CellReselectInformation-RSCP
}

HCS-NeighbouringCellInformation-ECN0 ::= SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    hcs-CellReselectInformation         HCS-CellReselectInformation-ECN0
}

HCS-PRIO ::=                        INTEGER (0..7)

HCS-ServingCellInformation ::=      SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    t-CR-Max                            T-CRMax                             OPTIONAL
}

-- Actual value = IE value * 0.5
Hysteresis ::=                      INTEGER (0..15)

-- Actual value = IE value * 0.5
HysteresisInterFreq ::=             INTEGER (0..29)

InterFreqCell ::=                   SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults
}

InterFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

InterFreqCellInfoList ::=           SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList                OPTIONAL
}

InterFreqCellInfoSI-List-RSCP ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-RSCP        OPTIONAL
}

InterFreqCellInfoSI-List-ECN0 ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-ECN0        OPTIONAL
}

InterFreqCellInfoSI-List-HCS-RSCP ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-RSCP    OPTIONAL
}
InterFreqCellInfoSI-List-HCS-ECN0 ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-ECN0    OPTIONAL
}

InterFreqCellList ::=               SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqCell

InterFreqCellMeasuredResultsList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellMeasuredResults

InterFreqEvent ::=                  CHOICE {
    event2a                             Event2a,
    event2b                             Event2b,
    event2c                             Event2c,
    event2d                             Event2d,
    event2e                             Event2e,
    event2f                             Event2f
}

InterFreqEventList ::=              SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        InterFreqEvent
```

```
InterFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList                   OPTIONAL
}


InterFreqMeasQuantity ::=           SEQUENCE {
    reportingCriteria                   CHOICE {
        intraFreqReportingCriteria          SEQUENCE {
            intraFreqMeasQuantity               IntraFreqMeasQuantity
        },
        interFreqReportingCriteria          SEQUENCE {
            filterCoefficient                   FilterCoefficient           DEFAULT fc0,
            modeSpecificInfo                    CHOICE {
                fdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-FDD     FreqQualityEstimateQuantity-FDD
                },
                tdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-TDD     FreqQualityEstimateQuantity-TDD
                }
            }
        }
    }
}

InterFreqMeasuredResults ::=        SEQUENCE {
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    utra-CarrierRSSI                    UTRA-CarrierRSSI                    OPTIONAL,
    interFreqCellMeasuredResultsList    InterFreqCellMeasuredResultsList    OPTIONAL
}

InterFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqMeasuredResults


InterFreqMeasurementSysInfo-RSCP ::=    SEQUENCE {
    interFreqMeasurementID                  MeasurementIdentityNumber           DEFAULT 2,
    interFreqCellInfoSI-List                InterFreqCellInfoSI-List-RSCP       OPTIONAL,
    interFreqMeasQuantity                   InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingCriteria              InterFreqReportingCriteria          OPTIONAL
}

InterFreqMeasurementSysInfo-ECN0 ::=        SEQUENCE {
    interFreqMeasurementID              MeasurementIdentityNumber           DEFAULT 2,
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-ECN0       OPTIONAL,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingCriteria          InterFreqReportingCriteria          OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-RSCP ::=        SEQUENCE {
    interFreqMeasurementID              MeasurementIdentityNumber           DEFAULT 2,
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-RSCP   OPTIONAL,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingCriteria          InterFreqReportingCriteria          OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-ECN0 ::=        SEQUENCE {
    interFreqMeasurementID              MeasurementIdentityNumber           DEFAULT 2,
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-ECN0   OPTIONAL,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingCriteria          InterFreqReportingCriteria          OPTIONAL
}

InterFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    interFreqReportingCriteria          InterFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterFreqReportingCriteria ::=      SEQUENCE {
    interFreqEventList                  InterFreqEventList                  OPTIONAL
}

InterFreqReportingQuantity ::=      SEQUENCE {
    utra-Carrier-RSSI                   BOOLEAN,
    frequencyQualityEstimate            BOOLEAN,
    nonFreqRelatedQuantities            CellReportingQuantities
}


InterFrequencyMeasurement ::=       SEQUENCE {
    interFreqCellInfoList               InterFreqCellInfoList,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
```

```
    interFreqReportingQuantity          InterFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    interFreqSetUpdate                  UE-AutonomousUpdateMode             OPTIONAL,
    reportCriteria                      InterFreqReportCriteria
}

InterRAT-TargetCellDescription::=   SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            ncMode                              NC-Mode             OPTIONAL
        },
        is-2000                             NULL,
        spare                               NULL
    }
}

InterSystemCellID ::=               INTEGER (0..maxCellMeas-1)

InterSystemCellInfoList ::=         SEQUENCE {
    removedInterSystemCellList          RemovedInterSystemCellList,
    newInterSystemCellList              NewInterSystemCellList
}

InterSystemCellInfoList-HCS ::=         SEQUENCE {
    removedInterSystemCellList          RemovedInterSystemCellList,
    newInterSystemCellList              NewInterSystemCellList-HCS
}

InterSystemEvent ::=                CHOICE {
    event3a                             Event3a,
    event3b                             Event3b,
    event3c                             Event3c,
    event3d                             Event3d
}

InterSystemEventList ::=            SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        InterSystemEvent

InterSystemEventResults ::=         SEQUENCE {
    eventID                             EventIDInterSystem,
    cellToReportList                    CellToReportList
}

InterSystemInfo ::=                 ENUMERATED {
                                        gsm, spare1 }


InterSystemMeasQuantity ::=             SEQUENCE {
    measQuantityUTRAN-QualityEstimate       IntraFreqMeasQuantity,
    systemSpecificInfo                      CHOICE {
        gsm                                     SEQUENCE {
            measurementQuantity                     MeasurementQuantityGSM,
            filterCoefficient                       FilterCoefficient       DEFAULT fc1,
            bsic-VerificationRequired               BSIC-VerificationRequired
        },
        is-2000                                 SEQUENCE {
            tadd-EcIo                               INTEGER (0..63),
            tcomp-EcIo                              INTEGER (0..15),
            softSlope                               INTEGER (0..63)         OPTIONAL,
            addIntercept                            INTEGER (0..63)         OPTIONAL
        }
    }
}

InterSystemMeasuredResults ::=      CHOICE {
    gsm                                 SEQUENCE {
        frequency                           Frequency,
        gsm-CarrierRSSI                     GSM-CarrierRSSI                 OPTIONAL,
        pathloss                            Pathloss                        OPTIONAL,
        bsic                                BSIC                            OPTIONAL,
        observedTimeDifferenceToGSM         ObservedTimeDifferenceToGSM     OPTIONAL
    },
    spare                               NULL
}

InterSystemMeasuredResultsList ::= SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                        InterSystemMeasuredResults


InterSystemMeasurement ::=          SEQUENCE {
    interSystemCellInfoList             InterSystemCellInfoList             OPTIONAL,
    interSystemMeasQuantity             InterSystemMeasQuantity             OPTIONAL,
    interSystemReportingQuantity        InterSystemReportingQuantity        OPTIONAL,
    reportCriteria                      InterSystemReportCriteria
```

```
}

InterSystemMeasurementSysInfo ::=   SEQUENCE {
    interSystemMeasurementID            MeasurementIdentityNumber           DEFAULT 3,
    interSystemCellInfoList             InterSystemCellInfoList             OPTIONAL,
    interSystemMeasQuantity             InterSystemMeasQuantity             OPTIONAL
}

InterSystemMeasurementSysInfo-HCS ::=   SEQUENCE {
    interSystemMeasurementID            MeasurementIdentityNumber           DEFAULT 3,
    interSystemCellInfoList             InterSystemCellInfoList-HCS         OPTIONAL,
    interSystemMeasQuantity             InterSystemMeasQuantity             OPTIONAL
}

InterSystemReportCriteria ::=       CHOICE {
    interSystemReportingCriteria        InterSystemReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterSystemReportingCriteria ::=    SEQUENCE {
    interSystemEventList                InterSystemEventList                OPTIONAL
}

InterSystemReportingQuantity ::=    SEQUENCE {
    utran-EstimatedQuality              BOOLEAN,
    systemSpecificInfo                  CHOICE {
        gsm                                 SEQUENCE {
            pathloss                            BOOLEAN,
            observedTimeDifferenceGSM           BOOLEAN,
            gsm-Carrier-RSSI                    BOOLEAN,
            bsic                                BOOLEAN
        },
        spare1                              NULL
    }
}

IntraFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

IntraFreqCellInfoList ::=           SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList                OPTIONAL
}


IntraFreqCellInfoSI-List-RSCP ::=   SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-RSCP
}

IntraFreqCellInfoSI-List-ECN0 ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-ECN0
}

IntraFreqCellInfoSI-List-HCS-RSCP ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-RSCP
}

IntraFreqCellInfoSI-List-HCS-ECN0 ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-ECN0
}

IntraFreqEvent ::=                  CHOICE {
    e1a                                 Event1a,
    e1b                                 Event1b,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1ef,
    e1f                                 Event1ef,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}


IntraFreqEventCriteria ::=          SEQUENCE {
    event                               IntraFreqEvent,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}
```

```
IntraFreqEventCriteriaList ::=      SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria

IntraFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDIntraFreq,
    cellMeasurementEventResults         CellMeasurementEventResults
}


IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT fc1,
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
            intraFreqMeasQuantity-FDD       IntraFreqMeasQuantity-FDD
        },
        tdd                             SEQUENCE {
            intraFreqMeasQuantity-TDDList   IntraFreqMeasQuantity-TDDList
        }
    }
}


IntraFreqMeasQuantity-FDD ::=       ENUMERATED {
                                        cpich-Ec-NO,
                                        cpich-RSCP,
                                        pathloss,
                                        utra-CarrierRSSI }

IntraFreqMeasQuantity-TDD ::=       ENUMERATED {
                                        primaryCCPCH-RSCP,
                                        pathloss,
                                        timeslotISCP,
                                        utra-CarrierRSSI }


IntraFreqMeasQuantity-TDDList ::=   SEQUENCE (SIZE (1..4)) OF
                                        IntraFreqMeasQuantity-TDD

IntraFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellMeasuredResults

IntraFreqMeasurementSysInfo-RSCP ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentityNumber           DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-RSCP       OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-ECN0 ::=        SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentityNumber           DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-ECN0       OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-RSCP ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentityNumber           DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-RSCP   OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-ECN0 ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentityNumber           DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-ECN0   OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

IntraFreqReportingCriteria ::=      SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList      OPTIONAL
```

```
}


IntraFreqReportingQuantity ::=      SEQUENCE {
    activeSetReportingQuantities        CellReportingQuantities,
    monitoredSetReportingQuantities     CellReportingQuantities,
    detectedSetReportingQuantities      CellReportingQuantities             OPTIONAL
}


IntraFreqReportingQuantityForRACH ::= SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-FDD        IntraFreqRepQuantityRACH-FDD
        },
        tdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-TDDList    IntraFreqRepQuantityRACH-TDDList
        }
    }
}


IntraFreqRepQuantityRACH-FDD ::=    ENUMERATED {
                                        cpich-EcN0, cpich-RSCP,
                                        pathloss, noReport }

IntraFreqRepQuantityRACH-TDD ::=    ENUMERATED {
                                        timeslotISCP,
                                        primaryCCPCH-RSCP,
                                        noReport }


IntraFreqRepQuantityRACH-TDDList ::= SEQUENCE (SIZE (1..2)) OF
                                        IntraFreqRepQuantityRACH-TDD

IntraFrequencyMeasurement ::=       SEQUENCE {
    intraFreqCellInfoList               IntraFreqCellInfoList               OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantity          IntraFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      IntraFreqReportCriteria
}

IODE ::=                            INTEGER (0..255)

IP-Length ::=                       ENUMERATED {
                                        ipl5, ipl10 }

IP-Spacing ::=                      ENUMERATED {
                                        e5, e7, e10, e15, e20,
                                        e30, e40, e50 }

IS-2000SpecificMeasInfo ::=         ENUMERATED {
                                        frequency, timeslot, colourcode,
                                        outputpower, pn-Offset }

K-InterRAT ::=                      INTEGER (0..12)

LCS-Accuracy ::=                    BIT STRING (SIZE (7))


--  For sfID=0 (sf4), pageNo=18, and sfID=0 & sfID=1 (sf4 & sf5), pageNo=25,
--  the IE fileds for word3 – word110 are the same as LCS-GPS-IonosphericModel
--  and LCS-GPS-UTC-Model. For the rest of the pages, they are the same as
--  LCS-GPS-Almanac.
LCS-Alma-SIB-Data ::=                   SEQUENCE {
    sfID                                INTEGER (0..1),
    dataID                              INTEGER (0..3),
    pageNo                              INTEGER (0..63),
    word3                               BIT STRING (SIZE (16)),
    word4                               BIT STRING (SIZE (24)),
    word5                               BIT STRING (SIZE (24)),
    word6                               BIT STRING (SIZE (24)),
    word7                               BIT STRING (SIZE (24)),
    word8                               BIT STRING (SIZE (24)),
    word9                               BIT STRING (SIZE (24)),
    word10                              BIT STRING (SIZE (22))
}

LCS-Alma-SIB-DataList ::=           SEQUENCE (SIZE (1..3)) OF
                                        LCS-Alma-SIB-Data

LCS-CipherParameters ::=            SEQUENCE {
    cipheringKeyFlag                    BIT STRING (SIZE (1)),
    cipheringSerialNumber               INTEGER (0..65535)
```

```
}

LCS-DGPS-SIB-Data ::=               SEQUENCE {
    nodeBClockDrift                     NodeB-ClockDrift                    OPTIONAL,
    referenceLocationforSIB ReferenceLocationforSIB,
    referenceSFN                        ReferenceSFN                        OPTIONAL,
    referenceGPS-TOW                    GPS-TOW-1usec,
    statusHealth                        DiffCorrectionStatus,
    dgps-InformationList                DGPS-InformationList
}

LCS-Ephe-SIB-Data ::=               SEQUENCE {
    transmissiontTOW                    INTEGER (0..1048575),
    satID                               SatID,
    tlmMessage                          BIT STRING (SIZE (14)),
    tlmRevd                             BIT STRING (SIZE (2)),
    how                                 BIT STRING (SIZE (22)),
    wn                                  BIT STRING (SIZE (10)),
    navModel                            NavModel
}

LCS-Error ::=                       SEQUENCE {
    errorReason                         LCS-ErrorCause,
    additionalAssistanceData            AdditionalAssistanceData
}

LCS-ErrorCause ::=                  ENUMERATED {
                                        notEnoughOTDOA-Cells,
                                        notEnoughGPS-Satellites,
                                        assistanceDataMissing,
                                        methodNotSupported,
                                        undefinedError,
                                        requestDeniedByUser,
                                        notProcessedAndTimeout }

LCS-EventID ::=                     ENUMERATED {
                                        e7a, e7b, e7c }

LCS-EventParam ::=                  SEQUENCE {
    eventID                             LCS-EventID,
    reportingAmount                     ReportingAmount,
    reportFirstFix                      BOOLEAN,
    measurementInterval                 LCS-MeasurementInterval,
    eventSpecificInfo                   LCS-EventSpecificInfo
}

LCS-EventParamList ::=              SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        LCS-EventParam

LCS-EventSpecificInfo ::=           CHOICE {
    e7a                                 ThresholdPositionChange,
    e7b                                 ThresholdSFN-SFN-Change,
    e7c                                 ThresholdSFN-GPS-TOW
}


LCS-GPS-AcquisitionAssistance ::=   SEQUENCE {
    referenceTime                       CHOICE {
        utran-ReferenceTime                 UTRAN-ReferenceTime,
        gps-ReferenceTimeOnly               INTEGER (0..604799999)
    },
    satelliteInformationList            AcquisitionSatInfoList
}

LCS-GPS-Almanac ::=                 SEQUENCE {
    wn-a                                BIT STRING (SIZE (8)),
    almanacSatInfoList                  AlmanacSatInfoList
}

LCS-GPS-AssistanceData ::=          SEQUENCE {
    lcs-GPS-ReferenceTime               LCS-GPS-ReferenceTime               OPTIONAL,
    lcs-GPS-ReferenceLocation           EllipsoidPointAltitude              OPTIONAL,
    lcs-GPS-DGPS-Corrections            LCS-GPS-DGPS-Corrections            OPTIONAL,
    lcs-GPS-NavigationModel             LCS-GPS-NavigationModel             OPTIONAL,
    lcs-GPS-IonosphericModel            LCS-GPS-IonosphericModel            OPTIONAL,
    lcs-GPS-UTC-Model                   LCS-GPS-UTC-Model                   OPTIONAL,
    lcs-GPS-Almanac                     LCS-GPS-Almanac                     OPTIONAL,
    lcs-GPS-AcquisitionAssistance       LCS-GPS-AcquisitionAssistance       OPTIONAL,
    lcs-GPS-Real-timeIntegrity          BadSatList                          OPTIONAL
}

LCS-Cipher-GPS-Data-Indicator ::=       SEQUENCE {
    lcs-CipherParameters                LCS-CipherParameters                OPTIONAL
}

LCS-GPS-DGPS-Corrections ::=        SEQUENCE {
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```
    gps-TOW                         INTEGER (0..604799),
    statusHealth                    DiffCorrectionStatus,
    dgps-CorrectionSatInfoList      DGPS-CorrectionSatInfoList
}

LCS-GPS-IonosphericModel ::=    SEQUENCE {
    alfa0                           BIT STRING (SIZE (8)),
    alfa1                           BIT STRING (SIZE (8)),
    alfa2                           BIT STRING (SIZE (8)),
    alfa3                           BIT STRING (SIZE (8)),
    beta0                           BIT STRING (SIZE (8)),
    beta1                           BIT STRING (SIZE (8)),
    beta2                           BIT STRING (SIZE (8)),
    beta3                           BIT STRING (SIZE (8))
}


LCS-GPS-Measurement ::=         SEQUENCE {
    referenceSFN                    ReferenceSFN                    OPTIONAL,
    gps-TOW-1msec                   GPS-TOW-1msec,
    gps-TOW-rem-usec                GPS-TOW-rem-usec                OPTIONAL,
    gps-MeasurementParamList        GPS-MeasurementParamList
}

LCS-GPS-NavigationModel ::=     SEQUENCE {
    n-SAT                           INTEGER (1..16),
    navigationModelSatInfoList      NavigationModelSatInfoList
}


LCS-GPS-ReferenceTime ::=       SEQUENCE {
    gps-Week                        INTEGER (0..1023),
    gps-TOW                         GPS-TOW-1usec,
    sfn                             INTEGER (0..4095),
    gps-TOW-AssistList              GPS-TOW-AssistList              OPTIONAL
}

LCS-GPS-UTC-Model ::=           SEQUENCE {
    a1                              BIT STRING (SIZE (24)),
    a0                              BIT STRING (SIZE (32)),
    t-ot                            BIT STRING (SIZE (8)),
    wn-t                            BIT STRING (SIZE (8)),
    delta-t-LS                      BIT STRING (SIZE (8)),
    wn-lsf                          BIT STRING (SIZE (8)),
    dn                              BIT STRING (SIZE (8)),
    delta-t-LSF                     BIT STRING (SIZE (8))
}

LCS-IPDL-Parameters ::=         SEQUENCE {
    ip-Spacing                      IP-Spacing,
    ip-Length                       IP-Length,
    ip-Offset                       INTEGER (0..9),
    seed                            INTEGER (0..63),
    burstModeParameters             BurstModeParameters
}

LCS-MeasuredResults ::=         SEQUENCE {
    lcs-MultipleSets                LCS-MultipleSets                OPTIONAL,
    lcs-ReferenceCellIdentity       PrimaryCPICH-Info               OPTIONAL,
    lcs-OTDOA-Measurement           LCS-OTDOA-Measurement           OPTIONAL,
    lcs-Position                    LCS-Position                    OPTIONAL,
    lcs-GPS-Measurement             LCS-GPS-Measurement             OPTIONAL,
    lcs-Error                       LCS-Error                       OPTIONAL
}

LCS-Measurement ::=             SEQUENCE {
    lcs-ReportingQuantity           LCS-ReportingQuantity,
    reportCriteria                  LCS-ReportCriteria,
    lcs-OTDOA-AssistanceData        LCS-OTDOA-AssistanceData        OPTIONAL,
    lcs-GPS-AssistanceData          LCS-GPS-AssistanceData          OPTIONAL
}

LCS-MeasurementEventResults ::= SEQUENCE {
    event7a                         LCS-Position,
    event7b                         LCS-OTDOA-Measurement,
    event7c                         LCS-GPS-Measurement
}

LCS-MeasurementInterval ::=     ENUMERATED {
                                    e5, e15, e60, e300,
                                    e900, e1800, e3600, e7200 }

LCS-MethodType ::=              ENUMERATED {
                                    ue-Assisted,
                                    ue-Based,
                                    ue-BasedPreferred,
```

```
                                    ue-AssistedPreferred }

LCS-MultipleSets ::=                SEQUENCE {
    numberOfOTDOA-IPDL-GPS-Sets         INTEGER (2..3),
    numberOfReferenceCells              INTEGER (1..3),
    referenceCellRelation               ReferenceCellRelation
}

LCS-OTDOA-AssistanceData ::=        SEQUENCE {
    lcs-OTDOA-ReferenceCell             LCS-OTDOA-ReferenceCell             OPTIONAL,
    lcs-OTDOA-MeasurementAssistDataList LCS-OTDOA-MeasurementAssistDataList OPTIONAL,
    lcs-IPDL-Parameters                 LCS-IPDL-Parameters                 OPTIONAL
}

LCS-OTDOA-AssistanceSIB ::=         SEQUENCE {
    lcs-CipherParameters                LCS-CipherParameters                OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    referenceCellPosition               ReferenceCellPosition,
    lcs-IPDL-Parameters                 LCS-IPDL-Parameters                 OPTIONAL,
    cellToMeasureInfoList               CellToMeasureInfoList
}

LCS-OTDOA-Measurement ::=           SEQUENCE {
    sfn                                 INTEGER (0..4095),
    -- Actual value = IE value * 0.25 + 876
    ue-Rx-Tx-TimeDifference             INTEGER (0..1184),
    qualityType                         QualityType,
    qualityChoice                       CHOICE {
        std-10                              ReferenceQuality10,
        std-50                              ReferenceQuality50,
        cpich-EcN0                          CPICH-Ec-N0-OTDOA,
        defaultQuality                      ReferenceQuality
    },
    neighborList                        NeighborList                        OPTIONAL
}

LCS-OTDOA-MeasurementAssistData ::= SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference1,
    fineSFN-SFN                         FineSFN-SFN                         OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    relativeNorth                       INTEGER (-20000..20000)             OPTIONAL,
    relativeEast                        INTEGER (-20000..20000)             OPTIONAL,
    relativeAltitude                    INTEGER (-4000..4000)               OPTIONAL
}

LCS-OTDOA-MeasurementAssistDataList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        LCS-OTDOA-MeasurementAssistData

LCS-OTDOA-ReferenceCell ::=         SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellPosition                        ReferenceCellPosition               OPTIONAL
}


LCS-Position ::=                    SEQUENCE {
    referenceSFN                        ReferenceSFN,
    gps-TOW                             GPS-TOW-1usec,
    positionEstimate                    PositionEstimate
}

LCS-ReportCriteria ::=              CHOICE {
    lcs-ReportingCriteria               LCS-EventParamList,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

LCS-ReportingQuantity ::=           SEQUENCE {
    methodType                          LCS-MethodType,
    positioningMethod                   PositioningMethod,
    responseTime                        LCS-ResponseTime,
    accuracy                            LCS-Accuracy                        OPTIONAL,
    gps-TimingOfCellWanted              BOOLEAN,
    multipleSets                        BOOLEAN,
    environmentCharacterization         EnvironmentCharacterization         OPTIONAL
}

LCS-ResponseTime ::=                ENUMERATED {
                                        s1, s2, s4, s8, s16,
                                        s32, s64, s128 }


MaxNumberOfReportingCellsType1 ::=  ENUMERATED {
                                        e1, e2, e3, e4, e5, e6}
```

```
MaxNumberOfReportingCellsType2 ::=  ENUMERATED {
                                        e1, e2, e3, e4, e5, e6, e7, e8, e9, e10, e11, e12}

MaxNumberOfReportingCellsType3 ::=  ENUMERATED {
                                        viactCellsPlus1,
                                        viactCellsPlus2,
                                        viactCellsPlus3,
                                        viactCellsPlus4,
                                        viactCellsPlus5,
                                        viactCellsPlus6 }

MaxReportedCellsOnRACH ::=          ENUMERATED {
                                        noReport,
                                        currentCell,
                                        currentAnd-1-BestNeighbour,
                                        currentAnd-2-BestNeighbour,
                                        currentAnd-3-BestNeighbour,
                                        currentAnd-4-BestNeighbour,
                                        currentAnd-5-BestNeighbour,
                                        currentAnd-6-BestNeighbour }

MeasuredResults ::=                 CHOICE {
    intraFreqMeasuredResultsList        IntraFreqMeasuredResultsList,
    interFreqMeasuredResultsList        InterFreqMeasuredResultsList,
    interSystemMeasuredResultsList      InterSystemMeasuredResultsList,
    trafficVolumeMeasuredResultsList    TrafficVolumeMeasuredResultsList,
    qualityMeasuredResults              QualityMeasuredResults,
    ue-InternalMeasuredResults          UE-InternalMeasuredResults,
    lcs-MeasuredResults                 LCS-MeasuredResults
}

MeasuredResultsList ::=             SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults


MeasuredResultsOnRACH ::=           SEQUENCE {
    currentCell                         SEQUENCE {
        modeSpecificInfo                    CHOICE {
            fdd                                 SEQUENCE {
                measurementQuantity                 CHOICE {
                    cpich-Ec-N0                         CPICH-Ec-N0,
                    cpich-RSCP                          CPICH-RSCP,
                    pathloss                            Pathloss
                }
            },
            tdd                                 SEQUENCE {
                timeslotISCP                        TimeslotISCP-List       OPTIONAL,
                primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP       OPTIONAL
            }
        }
    },
    monitoredCells                      MonitoredCellRACH-List              OPTIONAL
}

MeasurementCommand ::=              CHOICE {
    setup                               MeasurementType,
    modify                              SEQUENCE {
        measurementType                     MeasurementType                 OPTIONAL
    },
    release                             NULL
}

MeasurementControlSysInfo ::=       SEQUENCE {
    use-of-HCS                          CHOICE  {
        hcs-not-used                    SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-HCS-RSCP
        OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-HCS-RSCP
        OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-HCS-ECN0
        OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-HCS-ECN0
        OPTIONAL
                }
            },
            interSystemMeasurementSysInfo       InterSystemMeasurementSysInfo-HCS       OPTIONAL
        },
        hcs-used                        SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
```

```
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-RSCP
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-RSCP
    OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-ECN0
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-ECN0
    OPTIONAL
                }
            },
            interSystemMeasurementSysInfo       InterSystemMeasurementSysInfo       OPTIONAL
        }
    },

    trafficVolumeMeasSysInfo            TrafficVolumeMeasSysInfo            OPTIONAL,
    ue-InternalMeasurementSysInfo       UE-InternalMeasurementSysInfo       OPTIONAL
}


MeasurementIdentityNumber ::=       INTEGER (1..16)

MeasurementQuantityGSM ::=          ENUMERATED {
                                        gsm-CarrierRSSI,
                                        pathloss }

MeasurementReportingMode ::=        SEQUENCE {
    measurementReportTransferMode       TransferMode,
    periodicalOrEventTrigger            PeriodicalOrEventTrigger
}

MeasurementType ::=                 CHOICE {
    intraFrequencyMeasurement           IntraFrequencyMeasurement,
    interFrequencyMeasurement           InterFrequencyMeasurement,
    interSystemMeasurement              InterSystemMeasurement,
    lcs-Measurement                     LCS-Measurement,
    trafficVolumeMeasurement            TrafficVolumeMeasurement,
    qualityMeasurement                  QualityMeasurement,
    ue-InternalMeasurement              UE-InternalMeasurement
}

MeasurementValidity ::=             SEQUENCE {
    resume-Release                      Resume-Release
}

MonitoredCellRACH-List ::=          SEQUENCE (SIZE (1..7)) OF
                                        MonitoredCellRACH-Result


MonitoredCellRACH-Result ::=        SEQUENCE {
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            measurementQuantity                 CHOICE {
                cpich-Ec-N0                         CPICH-Ec-N0,
                cpich-RSCP                          CPICH-RSCP,
                pathloss                            Pathloss
            }                                                               OPTIONAL
        },
        tdd                                 SEQUENCE {
            cellParametersID                    CellParametersID,
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP
        }
    }
}

MultipathIndicator ::=              ENUMERATED {
                                        nm,
                                        low,
                                        medium,
                                        high }

N-CR-T-CRMaxHyst ::=                SEQUENCE {
    n-CR                                INTEGER (1..16)                     DEFAULT 8,
    t-CRMaxHyst                         T-CRMaxHyst
}

NavigationModelSatInfo ::=          SEQUENCE {
    satID                               SatID,
    satelliteStatus                     SatelliteStatus,
    navModel                            NavModel
}

NavigationModelSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
```

```
                                    NavigationModelSatInfo

NavModel ::=                        SEQUENCE {
    codeOnL2                            BIT STRING (SIZE (2)),
    uraIndex                            BIT STRING (SIZE (4)),
    satHealth                           BIT STRING (SIZE (6)),
    iodc                                BIT STRING (SIZE (10)),
    l2Pflag                             BIT STRING (SIZE (1)),
    sf1Revd                             SubFrame1Reserved,
    t-GD                                BIT STRING (SIZE (8)),
    t-oc                                BIT STRING (SIZE (16)),
    af2                                 BIT STRING (SIZE (8)),
    af1                                 BIT STRING (SIZE (16)),
    af0                                 BIT STRING (SIZE (22)),
    c-rs                                BIT STRING (SIZE (16)),
    delta-n                             BIT STRING (SIZE (16)),
    m0                                  BIT STRING (SIZE (32)),
    c-uc                                BIT STRING (SIZE (16)),
    e                                   BIT STRING (SIZE (32)),
    c-us                                BIT STRING (SIZE (16)),
    a-Sqrt                              BIT STRING (SIZE (32)),
    t-oe                                BIT STRING (SIZE (16)),
    fitInterval                         BIT STRING (SIZE (1)),
    aodo                                BIT STRING (SIZE (5)),
    c-ic                                BIT STRING (SIZE (16)),
    omega0                              BIT STRING (SIZE (32)),
    c-is                                BIT STRING (SIZE (16)),
    i0                                  BIT STRING (SIZE (32)),
    c-rc                                BIT STRING (SIZE (16)),
    omega                               BIT STRING (SIZE (32)),
    omegaDot                            BIT STRING (SIZE (24)),
    iDot                                BIT STRING (SIZE (14))
}

NC-Mode::=                          BIT STRING (SIZE (3))


Neighbor ::=                        SEQUENCE {
    neighborIdentity                    PrimaryCPICH-Info                   OPTIONAL,
    neignborQuantity                    NeighborQuantity,
    sfn-SFN-ObsTimeDifference2          SFN-SFN-ObsTimeDifference2
}

NeighborList ::=                    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        Neighbor

-- **TODO**, to be defined fully
NeighborQuantity ::=                SEQUENCE {
}

NewInterFreqCell ::=                SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfo
}

NewInterFreqCellList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCell

NewInterFreqCellSI-RSCP ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-RSCP
}

NewInterFreqCellSI-ECN0 ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-ECN0
}

NewInterFreqCellSI-HCS-RSCP ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-HCS-RSCP
}

NewInterFreqCellSI-HCS-ECN0 ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-HCS-ECN0
}

NewInterFreqCellSI-List-ECN0 ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-ECN0
```

```
NewInterFreqCellSI-List-HCS-RSCP ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                    NewInterFreqCellSI-HCS-RSCP

NewInterFreqCellSI-List-HCS-ECN0 ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                    NewInterFreqCellSI-HCS-ECN0

NewInterFreqCellSI-List-RSCP ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                    NewInterFreqCellSI-RSCP


NewInterSystemCell ::=              SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            q-Offset                            Q-Offset                    OPTIONAL,
            q-RxlevMin                          Q-RxlevMin,
            maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power,
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPower                     GSM-OutputPower             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare                               NULL
    }
}

NewInterSystemCell-HCS ::=              SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            q-Offset                            Q-Offset                    OPTIONAL,
            hcs-NeighbouringCellInformation-RSCP        HCS-NeighbouringCellInformation-RSCP
                                                                            OPTIONAL,
            q-RxlevMin                          Q-RxlevMin,
            maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power,
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPower                     GSM-OutputPower             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare                               NULL
    }
}
--???
NewInterSystemCellList ::=          SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterSystemCell

NewInterSystemCellList-HCS ::=          SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterSystemCell-HCS

NewIntraFreqCell ::=                SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfo
}

NewIntraFreqCellList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCell

NewIntraFreqCellSI-RSCP ::=             SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-RSCP
}

NewIntraFreqCellSI-ECN0 ::=         SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-ECN0
}
NewIntraFreqCellSI-HCS-RSCP ::=     SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-HCS-RSCP
}

NewIntraFreqCellSI-HCS-ECN0 ::=     SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-HCS-ECN0
}

NewIntraFreqCellSI-List-RSCP ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            NewIntraFreqCellSI-RSCP

NewIntraFreqCellSI-List-ECN0 ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                    NewIntraFreqCellSI-ECN0

NewIntraFreqCellSI-List-HCS-RSCP ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
```

```
                                    NewIntraFreqCellSI-HCS-RSCP

NewIntraFreqCellSI-List-HCS-ECN0 ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                    NewIntraFreqCellSI-HCS-ECN0

NodeB-ClockDrift ::=                INTEGER (0..15)

NonUsedFreqParameter ::=            SEQUENCE {
    nonUsedFreqThreshold                Threshold,
    nonUsedFreqW                        W
}

NonUsedFreqParameterList ::=        SEQUENCE (SIZE (1..maxFreq)) OF
                                    NonUsedFreqParameter

ObservedTimeDifferenceToGSM ::=     INTEGER (0..4095)

OTDOA-SearchWindowSize ::=          ENUMERATED {
                                    c10, c20, c30, c40, c50,
                                    c60, c70, moreThan70 }

OtherRAT-InSysInfo ::=              SEQUENCE {
    rat-Type                            RAT-Type,
    k-InterRAT                          K-InterRAT
}

OtherRAT-InSysInfoList ::=          SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                    OtherRAT-InSysInfo

Pathloss ::=                        INTEGER (46..158)

PenaltyTime-RSCP ::=                CHOICE {
    notUsed                             NULL,
    pt10                                TemporaryOffset,
    pt20                                TemporaryOffset,
    pt30                                TemporaryOffset,
    pt40                                TemporaryOffset,
    pt50                                TemporaryOffset,
    pt60                                TemporaryOffset
}

PenaltyTime-ECN0 ::=                CHOICE {
    notUsed                             NULL,
    pt10                                TemporaryOffsetList,
    pt20                                TemporaryOffsetList,
    pt30                                TemporaryOffsetList,
    pt40                                TemporaryOffsetList,
    pt50                                TemporaryOffsetList,
    pt60                                TemporaryOffsetList
}

PendingTimeAfterTrigger ::=         ENUMERATED {
                                    ptat0-25, ptat0-5, ptat1,
                                    ptat2, ptat4, ptat8, ptat16 }

PeriodicalOrEventTrigger ::=        ENUMERATED {
                                    periodical,
                                    eventTrigger }


PeriodicalReportingCriteria ::=     SEQUENCE {
    reportingAmount                     ReportingAmount                 DEFAULT ra-Infinity,
    reportingInterval                   ReportingIntervalLong
}


PeriodicalWithReportingCellStatus ::= SEQUENCE {
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

PositionEstimate ::=                CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointUncertCircle          EllipsoidPointUncertCircle,
    ellipsoidPointUncertEllipse         EllipsoidPointUncertEllipse,
    ellipsoidPointAltitude              EllipsoidPointAltitude,
    ellipsoidPointAltitudeEllipse       EllipsoidPointAltitudeEllipse
}

PositioningMethod ::=               ENUMERATED {
                                    otdoa,
                                    gps,
                                    otdoaOrGPS }

PRC ::=                             INTEGER (-2047..2047)
```

```
PrimaryCCPCH-RSCP ::=               INTEGER (-115..-25)

Q-HCS ::=                           INTEGER (0..99)

Q-Offset ::=                        INTEGER (-50..50)

Q-OffsetS-N ::=                     INTEGER (-50..50)

Q-QualMin ::=                       INTEGER (-20..0)

-- Actual value = (IE value * 2) + 1
Q-RxlevMin ::=                      INTEGER (-58..-13)

QualityEventResults ::=             SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity


QualityMeasuredResults ::=          SEQUENCE {
    blerMeasurementResultsList          BLER-MeasurementResultsList         OPTIONAL,
    dl-PhysicalChannelBER               DL-PhysicalChannelBER               OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            sir                                 SIR                         OPTIONAL
        },
        tdd                                 SEQUENCE {
            sir-MeasurementResults              SIR-MeasurementList         OPTIONAL
        }
    }
}


QualityMeasurement ::=              SEQUENCE {
    qualityReportingQuantity            QualityReportingQuantity            OPTIONAL,
    reportCriteria                      QualityReportCriteria
}


QualityReportCriteria ::=           CHOICE {
    qualityReportingCriteria            QualityReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

QualityReportingCriteria ::=        SEQUENCE (SIZE (1..maxTrCH)) OF
                                        QualityReportingCriteriaSingle

QualityReportingCriteriaSingle ::=  SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    totalCRC                            INTEGER (1..512),
    badCRC                              INTEGER (1..512),
    pendingAfterTrigger                 INTEGER (1..512)
}


QualityReportingQuantity ::=        SEQUENCE {
    dl-TransChBLER                      BOOLEAN,
    bler-dl-TransChIdList               BLER-TransChIdList                  OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            sir                                 BOOLEAN
        },
        tdd                                 SEQUENCE {
            sir-TFCS-List                       SIR-TFCS-List               OPTIONAL
        }
    }
}

QualityType ::=                     ENUMERATED {
                                        std-10, std-50, cpich-Ec-N0 }

RAT-Type ::=                        ENUMERATED {
                                        gsm, is2000, spare1, spare2,
                                        spare3, spare4, spare5, spare6,
                                        spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14 }

ReferenceCellPosition ::=           CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointWithAltitude          EllipsoidPointAltitude
}

ReferenceCellRelation ::=           ENUMERATED {
                                        first-12-second-3,
                                        first-13-second-2,
                                        first-1-second-23 }
```

```
-- As defined in 23.032 (2D with 24bits for each coordinate)
ReferenceLocationforSIB ::=         SEQUENCE {
    ellipsoidPoint                      EllipsoidPoint
}

ReferenceQuality ::=                ENUMERATED {
                                        m0-19, m20-39, m40-79,
                                        m80-159, m160-319, m320-639,
                                        m640-1319, m1320Plus }

-- Actual value = IE value * 10
ReferenceQuality10 ::=              INTEGER (1..32)

-- Actual value = IE value * 50
ReferenceQuality50 ::=              INTEGER (1..32)

ReferenceSFN ::=                    INTEGER (0..4095)

-- Actual value = IE value * 512
ReferenceTimeDifferenceToCell ::=   CHOICE {
    -- Actual value = IE value * 40
    accuracy40                          INTEGER (0..960),
    -- Actual value = IE value * 256
    accuracy256                         INTEGER (0..150),
    -- Actual value = IE value * 2560
    accuracy2560                        INTEGER (0..15)
}

RemovedInterFreqCellList ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        InterFreqCellID

RemovedInterSystemCellList ::=      SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        InterSystemCellID

RemovedIntraFreqCellList ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        IntraFreqCellID

ReplacementActivationThreshold ::=  ENUMERATED {
                                        notApplicable, t1, t2,
                                        t3, t4, t5, t6, t7 }

ReportDeactivationThreshold ::=     ENUMERATED {
                                        notApplicable, t1, t2,
                                        t3, t4, t5, t6, t7 }

ReportingAmount ::=                 ENUMERATED {
                                        ra1, ra2, ra4, ra8, ra16, ra32,
                                        ra64, ra-Infinity }


ReportingCellStatus ::=             CHOICE{
    withinActiveSet                     MaxNumberOfReportingCellsType1,
    withinMonitoredSetUsedFreq          MaxNumberOfReportingCellsType1,
    withinMonitoredUsedFreq             MaxNumberOfReportingCellsType1,
    allActiveplusMonitoredSet           MaxNumberOfReportingCellsType3,
    withinVirtualActSet                 MaxNumberOfReportingCellsType1,
    withinMonitoredSetNonUsedFreq       MaxNumberOfReportingCellsType1,
    withinMonitoredNonUsedFreq          MaxNumberOfReportingCellsType1,
    allVirtualActSetplusMonitoredSetNonUsedFreq
                                        MaxNumberOfReportingCellsType3,
    withinActSetOrVirtualActSet         MaxNumberOfReportingCellsType2,
    withinMonitoredUsedFreqOrMonitoredNonUsedFreq
                                        MaxNumberOfReportingCellsType2
}


ReportingCellStatusOpt ::=          SEQUENCE {
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}


ReportingInfoForCellDCH ::=         SEQUENCE {
    intraFreqReportingQuantity          IntraFreqReportingQuantity,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteria                      CellDCH-ReportCriteria
}

ReportingInterval ::=               ENUMERATED {
                                        noPeriodicalreporting, ri0-25,
                                        ri0-5, ri1, ri2, ri4, ri8, ri16 }

ReportingIntervalLong ::=           ENUMERATED {
                                        ril0, ril0-25, ril0-5, ril1,
                                        ril2, ril3, ril4, ril6, ril8,
                                        ril12, ril16, ril20, ril24,
```

```
                                    ril28, ril32, ril64 }

-- Actual value = IE value * 0.5
ReportingRange ::=                  INTEGER (0..29)

Resume-Release ::=                  CHOICE {
    resume                              UE-State,
    release                             NULL
}

RL-AdditionInfoList ::=             SEQUENCE (SIZE (1..maxRL-1)) OF
                                        PrimaryCPICH-Info

RL-InformationLists ::=             SEQUENCE {
    rl-AdditionInfoList                 RL-AdditionInfoList                 OPTIONAL,
    rl-RemovalInfoList                  RL-RemovalInfoList                  OPTIONAL
}

RL-RemovalInfoList ::=              SEQUENCE (SIZE (1..maxRL)) OF
                                        PrimaryCPICH-Info

RLC-BuffersPayload ::=              ENUMERATED {
                                        pl0, pl4, pl8, pl16, pl32, pl64, pl128,
                                        pl256, pl512, pl1024, pl2k, pl4k,
                                        pl8k, pl16k, pl32k, pl64k, pl128k,
                                        pl256k, pl512k, pl1024k }

RRC ::=                             INTEGER (-127..127)

SatelliteStatus ::=                 ENUMERATED {
                                        ns-NN-U,
                                        es-SN,
                                        es-NN-U,
                                        es-NN-C }

SatID ::=                           INTEGER (0..63)

SFN-SFN-ObsTimeDifference ::=       CHOICE {
    type1                               SFN-SFN-ObsTimeDifference1,
    -- Actual value for type2 = IE value * 0.25
    type2                               SFN-SFN-ObsTimeDifference2
}

SFN-SFN-ObsTimeDifference1 ::=      INTEGER (0..9830399)

SFN-SFN-ObsTimeDifference2 ::=      INTEGER (-5119..5120)

SFN-SFN-OTD-Type ::=                ENUMERATED {
                                        noReport,
                                        type1,
                                        type2 }

SIR ::=                             INTEGER (-10..20)


SIR-MeasurementList ::=             SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        SIR-MeasurementResults


SIR-MeasurementResults ::=          SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain,
    sir-TimeslotList                    SIR-TimeslotList
}


SIR-TFCS ::=                        TFCS-IdentityPlain


SIR-TFCS-List ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        SIR-TFCS


SIR-TimeslotList ::=                SEQUENCE (SIZE (1..maxTS)) OF
                                        SIR

-- Reserved bits in subframe 1 of the GPS navigation message
SubFrame1Reserved ::=               SEQUENCE {
    reserved1                           BIT STRING (SIZE (23)),
    reserved2                           BIT STRING (SIZE (24)),
    reserved3                           BIT STRING (SIZE (24)),
    reserved4                           BIT STRING (SIZE (16))
}

T-CRMax ::=                         CHOICE {
    notUsed                             NULL,
    t30                                 N-CR-T-CRMaxHyst,
```

```
    t60                                 N-CR-T-CRMaxHyst,
    t120                                N-CR-T-CRMaxHyst,
    t180                                N-CR-T-CRMaxHyst,
    t240                                N-CR-T-CRMaxHyst
}

T-CRMaxHyst ::=                     ENUMERATED {
                                        notUsed, t10, t20, t30,
                                        t40, t50, t60, t70 }

TemporaryOffset ::=                 ENUMERATED {
                                        to10, to20, to30, to40, to50,
                                        to60, to70, infinite }

TemporaryOffsetList ::=             SEQUENCE    {
        temporaryOffset1                TemporaryOffset,
        temporaryOffset2                TemporaryOffset
}

Threshold ::=                       INTEGER (-115..0)

ThresholdPositionChange ::=         ENUMERATED {
                                        pc10, pc20, pc30, pc40, pc50,
                                        pc100, pc200, pc300, pc500,
                                        pc1000, pc2000, pc5000, pc10000,
                                        pc20000, pc50000, pc100000 }

ThresholdSFN-GPS-TOW ::=            ENUMERATED {
                                        ms1, ms2, ms3, ms5, ms10,
                                        ms20, ms50, ms100 }

ThresholdSFN-SFN-Change ::=         ENUMERATED {
                                        c0-25, c0-5, c1, c2, c3, c4, c5,
                                        c10, c20, c50, c100, c200, c500,
                                        c1000, c2000, c5000 }

ThresholdUsedFrequency ::=          INTEGER (-115..165)


-- Actual value = IE value * 20, IE values 14-16 are spare values.
TimeInterval ::=                    INTEGER (1..16)


TimeslotInfo ::=                    SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    burstType                           BurstType
}


TimeslotInfoList ::=                SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotInfo

TimeslotISCP ::=                    INTEGER (-115..-25)


TimeslotISCP-List ::=               SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotISCP

TimeslotListWithISCP ::=            SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotWithISCP

TimeslotWithISCP ::=                SEQUENCE {
    timeslot                            TimeslotNumber,
    timeslotISCP                        TimeslotISCP
}

TimeToTrigger ::=                   ENUMERATED {
                                        ttt0, ttt10, ttt20, ttt40, ttt60,
                                        ttt80, ttt100, ttt120, ttt160,
                                        ttt200, ttt240, tt320, ttt640,
                                        ttt1280, ttt2560, ttt5000 }

TrafficVolumeEventParam ::=         SEQUENCE {
    eventID                             TrafficVolumeEventType,
    reportingThreshold                  TrafficVolumeThreshold
}

TrafficVolumeEventResults ::=       SEQUENCE {
    ul-transportChannelCausingEvent     TransportChannelIdentity,
    trafficVolumeEventIdentity          TrafficVolumeEventType
}

TrafficVolumeEventType ::=          ENUMERATED {
                                        e4a,
                                        e4b }
```

```
TrafficVolumeMeasQuantity ::=       CHOICE {
    rlc-BufferPayload                   NULL,
    averageRLC-BufferPayload            TimeInterval,
    varianceOfRLC-BufferPayload         TimeInterval
}


TrafficVolumeMeasSysInfo ::=        SEQUENCE {
    trafficVolumeMeasurementID          MeasurementIdentityNumber           DEFAULT 4,
    trafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    trafficVolumeMeasRepCriteria        TrafficVolumeReportingCriteria      OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteriaSysInf                TrafficVolumeReportCriteriaSysInfo

}

TrafficVolumeMeasuredResults ::=    SEQUENCE {
    rb-Identity                         RB-Identity,
    rlc-BuffersPayload                  RLC-BuffersPayload                  OPTIONAL,
    averageRLC-BufferPayload            AverageRLC-BufferPayload            OPTIONAL,
    varianceOfRLC-BufferPayload         VarianceOfRLC-BufferPayload         OPTIONAL
}

TrafficVolumeMeasuredResultsList ::= SEQUENCE (SIZE (1..maxRB)) OF
                                        TrafficVolumeMeasuredResults

TrafficVolumeMeasurement ::=        SEQUENCE {
    trafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      TrafficVolumeReportCriteria
}

TrafficVolumeMeasurementObjectList ::= SEQUENCE (SIZE (1..maxTrCH)) OF
                                            TransportChannelIdentity

TrafficVolumeReportCriteria ::=     CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}


TrafficVolumeReportCriteriaSysInfo ::=  CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}


TrafficVolumeReportingCriteria ::= SEQUENCE {
    transChCriteriaList                 TransChCriteriaList                 OPTIONAL,
    timeToTrigger                       TimeToTrigger                       OPTIONAL,
    pendingTimeAfterTrigger             PendingTimeAfterTrigger             OPTIONAL,
    tx-InterruptionAfterTrigger         TX-InterruptionAfterTrigger         OPTIONAL,
    reportingAmount                     ReportingAmount                     OPTIONAL
}

TrafficVolumeReportingQuantity ::= SEQUENCE {
    rlc-RB-BufferPayload                BOOLEAN,
    rlc-RB-BufferPayloadAverage         BOOLEAN,
    rlc-RB-BufferPayloadVariance        BOOLEAN
}

TrafficVolumeThreshold ::=          ENUMERATED {
                                        th8, th16, th32, th64, th128,
                                        th256, th512, th1024, th2k, th3k,
                                        th4k, th6k, th8k, th12k, th16k,
                                        th24k, th32k, th48k, th64k, th96k,
                                        th128k, th192k, th256k, th384k,
                                        th512k, th768k }


TransChCriteria ::=                 SEQUENCE {
    ul-transportChannelID               TransportChannelIdentity        OPTIONAL,
    eventSpecificParameters             SEQUENCE (SIZE (1..maxMeasParEvent)) OF
                                            TrafficVolumeEventParam     OPTIONAL
}

TransChCriteriaList ::=         SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransChCriteria
```

```
TransferMode ::=                    ENUMERATED {
                                        acknowledgedModeRLC,
                                        unacknowledgedModeRLC }

TransmittedPowerThreshold ::=       INTEGER (-50..33)

TriggeringCondition ::=             ENUMERATED {
                                        activeSetCellsOnly,
                                        monitoredCellsOnly,
                                        activeSetAndMonitoredCells }

TX-InterruptionAfterTrigger ::=     ENUMERATED {
                                        txiat0-25, txiat0-5, txiat1,
                                        txiat2, txiat4, txiat8, txiat16 }

UDRE ::=                            ENUMERATED {
                                        lessThan1,
                                        between1-and-4,
                                        between4-and-8,
                                        over8 }

UE-6AB-Event ::=                    SEQUENCE {
    timeToTrigger                       TimeToTrigger,
    transmittedPowerThreshold           TransmittedPowerThreshold
}

UE-6FG-Event ::=                    SEQUENCE {
    timeToTrigger                       TimeToTrigger,
    ue-RX-TX-TimeDifferenceThreshold    UE-RX-TX-TimeDifferenceThreshold
}

UE-AutonomousUpdateMode ::=         CHOICE {
    on                                  NULL,
    onWithNoReporting                   NULL,
    off                                 RL-InformationLists
}


UE-InternalEventParam ::=           CHOICE {
    event6a                             UE-6AB-Event,
    event6b                             UE-6AB-Event,
    event6c                             TimeToTrigger,
    event6d                             TimeToTrigger,
    event6e                             TimeToTrigger,
    event6f                             UE-6FG-Event,
    event6g                             UE-6FG-Event
}

UE-InternalEventParamList ::=       SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        UE-InternalEventParam

UE-InternalEventResults ::=         CHOICE {
    event6a                             NULL,
    event6b                             NULL,
    event6c                             NULL,
    event6d                             NULL,
    event6e                             NULL,
    event6f                             PrimaryCPICH-Info,
    event6g                             PrimaryCPICH-Info
}

UE-InternalMeasQuantity ::=         SEQUENCE {
    measurementQuantity                 UE-MeasurementQuantity,
    filterCoefficient                   FilterCoefficient                   DEFAULT fc1
}


UE-InternalMeasuredResults ::=      SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-TransmittedPowerFDD              UE-TransmittedPower         OPTIONAL,
            ue-RX-TX-ReportEntryList            UE-RX-TX-ReportEntryList    OPTIONAL
        },
        tdd                                 SEQUENCE {
            ue-TransmittedPowerTDD-List         UE-TransmittedPowerTDD-List OPTIONAL,
            appliedTA                           UL-TimingAdvance            OPTIONAL
        }
    }
}

UE-InternalMeasurement ::=          SEQUENCE {
    ue-InternalMeasQuantity             UE-InternalMeasQuantity             OPTIONAL,
    ue-InternalReportingQuantity        UE-InternalReportingQuantity        OPTIONAL,
    reportCriteria                      UE-InternalReportCriteria
}
```

```
UE-InternalMeasurementSysInfo ::=   SEQUENCE {
    ue-InternalMeasurementID            MeasurementIdentityNumber           DEFAULT 5,
    ue-InternalMeasQuantity             UE-InternalMeasQuantity
}

UE-InternalReportCriteria ::=       CHOICE {
    ue-InternalReportingCriteria        UE-InternalReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

UE-InternalReportingCriteria ::=    SEQUENCE {
    ue-InternalEventParamList           UE-InternalEventParamList           OPTIONAL
}


UE-InternalReportingQuantity ::=    SEQUENCE {
    ue-TransmittedPower                 BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-RX-TX-TimeDifferece              BOOLEAN
        },
        tdd                                 SEQUENCE {
            appliedTA                           BOOLEAN
        }
    }
}


-- TABULAR: For TDD only the first two values are used.
UE-MeasurementQuantity ::=          ENUMERATED {
                                        ue-TransmittedPower,
                                        utra-Carrier-RSSI,
                                        ue-RX-TX-TimeDifference }

UE-RX-TX-ReportEntry ::=            SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    ue-RX-TX-TimeDifference             UE-RX-TX-TimeDifference
}

UE-RX-TX-ReportEntryList ::=        SEQUENCE (SIZE (1..maxRL)) OF
                                        UE-RX-TX-ReportEntry

UE-RX-TX-TimeDifference ::=         INTEGER (876..1172)

UE-RX-TX-TimeDifferenceThreshold ::= INTEGER (769..1280)

UE-State ::=                        ENUMERATED {
                                        cell-DCH, all-But-Cell-DCH, all-States }


UE-TransmittedPower ::=             INTEGER (-50..33)


UE-TransmittedPowerTDD-List ::=     SEQUENCE (SIZE (1..maxTS)) OF
                                        UE-TransmittedPower

UTRA-CarrierRSSI ::=                INTEGER (-95..-30)


UTRAN-ReferenceTime ::=             SEQUENCE {
    gps-TOW                             GPS-TOW-1usec,
    sfn                                 INTEGER (0..4095)
}

VarianceOfRLC-BufferPayload ::=     ENUMERATED {
                                        plv0, plv4, plv8, plv16, plv32, plv64,
                                        plv128, plv256, plv512, plv1024,
                                        plv2k, plv4k, plv8k, plv16k }

-- Actual value = IE value * 0.1
W ::=                               INTEGER (0..20)

END
```

11.3.8 Other information elements

```
Other-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CN-DomainSysInfoList,
    NAS-SystemInformationGSM-MAP,
    PLMN-Type
FROM CoreNetwork-IEs

    CellAccessRestriction,
    CellIdentity,
    CellSelectReselectInfoSIB-3-4,
    URA-IdentityList
FROM UTRANMobility-IEs

    CapabilityUpdateRequirement,
    CPCH-Parameters,
    DRAC-SysInfoList,
    ProtocolErrorCause,
    UE-ConnTimersAndConstants,
    UE-DCHTimersAndConstants,
    UE-IdleTimersAndConstants
FROM UserEquipment-IEs

    PredefinedConfigIdentity,
    PredefinedConfigValueTag,
    PreDefRadioConfiguration
FROM RadioBearer-IEs

    AICH-PowerOffset,
    ConstantValue,
    CPCH-PersistenceLevelsList,
    CPCH-SetInfoList,
    CSICH-PowerOffset,
    DynamicPersistenceLevelList,
    IndividualTS-InterferenceList,
    MidambleConfiguration,
    PDSCH-SysInfoList,
    PUSCH-SysInfoList-SFN,
    PICH-PowerOffset,
    PRACH-SystemInformationList,
    PrimaryCCPCH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-SysInfoList,
    PUSCH-SysInfoList-SFN,
    SCCPCH-SystemInformationList,
    UL-Interference
FROM PhysicalChannel-IEs

    FACH-MeasurementOccasionInfo,
    LCS-Alma-SIB-DataList,
    LCS-DGPS-SIB-Data,
    LCS-Ephe-SIB-Data,
    LCS-Cipher-GPS-Data-Indicator,
    LCS-OTDOA-AssistanceSIB,
    MeasurementControlSysInfo
FROM Measurement-IEs

    ANSI-41-GlobalServiceRedirectInfo,
    ANSI-41-PrivateNeighborListInfo,
    ANSI-41-RAND-Information,
    ANSI-41-UserZoneID-Information
FROM ANSI-41-IEs

    maxInterSysMessages,
    maxSIB,
    maxSIB-FACH
FROM Constant-definitions;

BCC ::=                             INTEGER (0..7)

BCCH-ModificationInfo ::=           SEQUENCE {
    mib-ValueTag                        MIB-ValueTag,
    bcch-ModificationTime               BCCH-ModificationTime               OPTIONAL
}


-- Actual value = IE value * 8
BCCH-ModificationTime ::=           INTEGER (0..511)

BSIC ::=                            SEQUENCE {
```

```
    ncc                                 NCC,
    bcc                                 BCC
}

CBS-DRX-Level1Information ::=       SEQUENCE {
    ctch-AllocationPeriod               INTEGER (1..256),
    cbs-FrameOffset                     INTEGER (0..255)
}

CDMA2000-Message ::=                SEQUENCE {
    msg-Type                            BIT STRING (SIZE (8)),
    payload                             BIT STRING (SIZE (1..512))
}

CDMA2000-MessageList ::=            SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        CDMA2000-Message

CellValueTag ::=                    INTEGER (1..4)

GSM-MessageList ::=                 SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..512))

InterRAT-ChangeFailureCause ::=     CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    unspecified                         NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

~~InterSystemHO~~InterRAT-HO-Failure ::=            SEQUENCE {
    ~~InterSystemHO~~interRAT-HO-FailureCause           ~~InterSystemHO~~InterRAT-HO-FailureCause
    OPTIONAL,
    interSystemMessage                  InterSystemMessage                  OPTIONAL
}

~~InterSystemHO~~InterRAT-HO-FailureCause ::=       CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    interRAT-ProtocolError              NULL,
    unspecified                         NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

InterSystemMessage ::=              CHOICE {
    gsm                                 SEQUENCE {
        gsm-MessageList                     GSM-MessageList
    },
    cdma2000                            SEQUENCE {
        cdma2000-MessageList                CDMA2000-MessageList
    },
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL,
    spare5                              NULL,
    spare6                              NULL
}

MasterInformationBlock ::=          SEQUENCE {
        mib-ValueTag                    MIB-ValueTag,
        plmn-Type                       PLMN-Type,
        -- TABULAR: The PLMN identity and ANSI-41 core network information
        -- are included in PLMN-Type.
        sib-ReferenceList               SIB-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

MIB-ValueTag ::=                    INTEGER (1..8)

NCC ::=                             INTEGER (0..7)

PLMN-ValueTag ::=                   INTEGER (1..256)


PredefinedConfigIdentityAndValueTag ::= SEQUENCE {
    predefinedConfigIdentity            PredefinedConfigIdentity,
    predefinedConfigValueTag            PredefinedConfigValueTag
}
```

```
ProtocolErrorInformation ::=        SEQUENCE {
    diagnosticsType                     CHOICE {
        type1                               SEQUENCE {
            protocolErrorCause                  ProtocolErrorCause
        },
        spare                               NULL
    }
}


SchedulingInformation ::=           SEQUENCE {
    sib-Type                            SIB-TypeAndTag,
    scheduling                          SEQUENCE {
        segCount                            SegCount                        DEFAULT 1,
        sib-Pos                             CHOICE {
            -- The element name indicates the repetition period and the value
            -- (multiplied by two) indicates the position of the first segment.
            rep4                                INTEGER (0..1),
            rep8                                INTEGER (0..3),
            rep16                               INTEGER (0..7),
            rep32                               INTEGER (0..15),
            rep64                               INTEGER (0..31),
            rep128                              INTEGER (0..63),
            rep256                              INTEGER (0..127),
            rep512                              INTEGER (0..255),
            rep1024                             INTEGER (0..511),
            rep2048                             INTEGER (0..1023),
            rep4096                             INTEGER (0..2047)
        },
        sib-PosOffsetInfo                   SibOFF-List                     OPTIONAL
    }                                                                       OPTIONAL
}

SegCount ::=                        INTEGER (1..16)

SegmentIndex ::=                    INTEGER (0..15)

-- Actual value = 2 * IE value
SFN-Prime ::=                       INTEGER (0..2047)


SIB-Data-fixed ::=                  BIT STRING (SIZE (222))


SIB-Data-variable ::=               BIT STRING (SIZE (1..214))

SIB-ReferenceList ::=               SEQUENCE (SIZE (1..maxSIB)) OF
                                        SchedulingInformation

SIB-ReferenceListFACH ::=           SEQUENCE (SIZE (1..maxSIB-FACH)) OF
                                        SchedulingInformation

SIB-Type ::=                        ENUMERATED {
                                        masterInformationBlock,
                                        systemInformationBlockType1,
                                        systemInformationBlockType2,
                                        systemInformationBlockType3,
                                        systemInformationBlockType4,
                                        systemInformationBlockType5,
                                        systemInformationBlockType6,
                                        systemInformationBlockType7,
                                        systemInformationBlockType8,
                                        systemInformationBlockType9,
                                        systemInformationBlockType10,
                                        systemInformationBlockType11,
                                        systemInformationBlockType12,
                                        systemInformationBlockType13,
                                        systemInformationBlockType13-1,
                                        systemInformationBlockType13-2,
                                        systemInformationBlockType13-3,
                                        systemInformationBlockType13-4,
                                        systemInformationBlockType14,
                                        systemInformationBlockType15,
                                        systemInformationBlockType15-1,
                                        systemInformationBlockType15-2,
                                        systemInformationBlockType15-3,
                                        systemInformationBlockType16,
                                        systemInformationBlockType17,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7 }

SIB-TypeAndTag ::=                  CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        PLMN-ValueTag,
    sysInfoType3                        CellValueTag,
    sysInfoType4                        CellValueTag,
```

```
    sysInfoType5                        CellValueTag,
    sysInfoType6                        CellValueTag,
    sysInfoType7                        NULL,
    sysInfoType8                        CellValueTag,
    sysInfoType9                        NULL,
    sysInfoType10                       NULL,
    sysInfoType11                       CellValueTag,
    sysInfoType12                       CellValueTag,
    sysInfoType13                       CellValueTag,
    sysInfoType13-1                     CellValueTag,
    sysInfoType13-2                     CellValueTag,
    sysInfoType13-3                     CellValueTag,
    sysInfoType13-4                     CellValueTag,
    sysInfoType14                       NULL,
    sysInfoType15                       CellValueTag,
    sysInfoType16                       PredefinedConfigIdentityAndValueTag,
    sysInfoType17                       NULL
}

SibOFF ::=                          ENUMERATED {
                                        so2, so4, so6, so8, so10,
                                        so12, so14, so16, so18,
                                        so20, so22, so24, so26,
                                        so28, so30, so32 }

SibOFF-List ::=                     SEQUENCE (SIZE (1..15)) OF
                                        SibOFF


SysInfoType1 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants,
        ue-DCHTimersAndConstants        UE-DCHTimersAndConstants,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType2 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- UTRAN mobility IEs
        ura-IdentityList                URA-IdentityList,
    -- User equipment IEs
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType3 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType4 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType5 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                pich-PowerOffset                PICH-PowerOffset,
```

```
            aich-PowerOffset                AICH-PowerOffset
        },
        tdd                             SEQUENCE {
            pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
            pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
            midambleConfiguration           MidambleConfiguration       OPTIONAL,
            primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power       OPTIONAL,
            prach-ConstantValue             ConstantValue               OPTIONAL,
            dpch-ConstantValue              ConstantValue               OPTIONAL,
            pusch-ConstantValue             ConstantValue               OPTIONAL
    }
    },
    primaryCCPCH-Info               PrimaryCCPCH-Info               OPTIONAL,
    prach-SystemInformationList     PRACH-SystemInformationList,
    sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
    cbs-DRX-Level1Information       CBS-DRX-Level1Information       OPTIONAL,
    -- Conditional on any of the CTCH indicator IEs in
    -- sCCPCH-SystemInformationList
-- Extension mechanism for non- release99 information
    nonCriticalExtensions           SEQUENCE {}
}


SysInfoType6 ::=                    SEQUENCE {
-- Other IEs
    sib-ReferenceList               SIB-ReferenceList               OPTIONAL,
-- Physical channel IEs
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            pich-PowerOffset                PICH-PowerOffset,
            aich-PowerOffset                AICH-PowerOffset,
            csich-PowerOffset               CSICH-PowerOffset       OPTIONAL
        },
        tdd                             SEQUENCE {
            pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
            pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
            midambleConfiguration           MidambleConfiguration       OPTIONAL,
            primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power       OPTIONAL,
            prach-ConstantValue             ConstantValue               OPTIONAL,
            dpch-ConstantValue              ConstantValue               OPTIONAL,
            pusch-ConstantValue             ConstantValue               OPTIONAL
        }
    },
    primaryCCPCH-Info               PrimaryCCPCH-Info               OPTIONAL,
    prach-SystemInformationList     PRACH-SystemInformationList,
    sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
    cbs-DRX-Level1Information       CBS-DRX-Level1Information       OPTIONAL,
    -- Conditional on any of the CTCH indicator IEs in
    -- sCCPCH-SystemInformationList
-- Extension mechanism for non- release99 information
    nonCriticalExtensions           SEQUENCE {}
}


SysInfoType7 ::=                    SEQUENCE {
-- Other IEs
    sib-ReferenceList               SIB-ReferenceList               OPTIONAL,
-- Physical channel IEs
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            ul-Interference                 UL-Interference
        },
        tdd                             NULL
    },
    prach-Information-SIB5-List     DynamicPersistenceLevelList,
    prach-Information-SIB6-List     DynamicPersistenceLevelList     OPTIONAL,
-- Extension mechanism for non- release99 information
    nonCriticalExtensions           SEQUENCE {}
}


SysInfoType8 ::=                    SEQUENCE {
-- Other IEs
    sib-ReferenceList               SIB-ReferenceList               OPTIONAL,
-- User equipment IEs
    cpch-Parameters                 CPCH-Parameters,
-- Physical channel IEs
    cpch-SetInfoList                CPCH-SetInfoList,
-- Extension mechanism for non- release99 information
    nonCriticalExtensions           SEQUENCE {}
}


SysInfoType9 ::=                    SEQUENCE {
-- Other IEs
    sib-ReferenceList               SIB-ReferenceList               OPTIONAL,
```

```
    -- Physical channel IEs
        cpch-PersistenceLevelsList      CPCH-PersistenceLevelsList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType10 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- User equipment IEs
        drac-SysInfoList                DRAC-SysInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType11 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo       OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType12 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo       OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Core network IEs
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants           OPTIONAL,
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-1 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-RAND-Information        ANSI-41-RAND-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-2 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-UserZoneID-Information  ANSI-41-UserZoneID-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-3 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-PrivateNeighborListInfo ANSI-41-PrivateNeighborListInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-4 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-GlobalServiceRedirectInfo
                                        ANSI-41-GlobalServiceRedirectInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType14 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        individualTS-InterferenceList   IndividualTS-InterferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}
```

```
SysInfoType15 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Measurement IEs
        lcs-GPS-Assistance              LCS-Cipher-GPS-Data-Indicator               OPTIONAL,
        lcs-OTDOA-Assistance            LCS-OTDOA-AssistanceSIB             OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15-1 ::=                 SEQUENCE {
    -- DGPS corrections
        lcs-DGPS-SIB-Data               LCS-DGPS-SIB-Data
}

SysInfoType15-2 ::=                 SEQUENCE {
-- Ephemeris and clock corrections
    lcs-Ephe-SIB-Data               LCS-Ephe-SIB-Data
}

SysInfoType15-3 ::=                 SEQUENCE {
    -- Almanac and other data
        transmissionTOW                 INTEGER (0..1048575),
        satMask                         BIT STRING (SIZE (1..32)),
        lsbTOW                          BIT STRING (SIZE (8)),
        lcs-Alma-SIB-DataList           LCS-Alma-SIB-DataList
}


SysInfoType16 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Radio bearer IEs
        preDefinedRadioConfiguration    PreDefRadioConfiguration,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType17 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        pusch-SysInfoList               PUSCH-SysInfoList-SFN               OPTIONAL,
        pdsch-SysInfoList               PDSCH-SysInfoList-SFN               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

END
```

14.10 Provision and reception of RRC information between network nodes

In certain cases, e.g., when performing handover to UTRAN or when performing SRNC relocation, RRC information may need to be transferred between other RATs and UTRAN or between UTRAN nodes within UTRAN. In the following, the details of the RRC information to be transferred are specified per direction.

Like for the Uu interface, the transfer syntax for RRC transferred between UTRAN network nodes and/ or between UTRAN and other RATs 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. However, this final padding shall not be part of the RRC information transferred between the network nodes, which means that the result is a~~n octet~~ bit string.

14.10.1 RRC Information to target RNC

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 SRNC information, 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 in a manner transparent to the UE.

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
CHOICE case	MP			
>Handover to UTRAN				
>>UE radio access capability	OP		UE radio access capability 10.3.3.40	
>>UE system specific capability	OP		Inter-system message 10.3.8.6	
>>UE security information	OP		UE security information 14.13.2.2	
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	
>SRNC relocation				
>>State of RRC	MP		Enumerated (CELL_DCH, CELL_FACH,CELL_PCH, URA_PCH)	
>>State of RRC procedure	MP		Enumerated (await no RRC message, await RRC Connection Re-establishment Complete, await RB Setup Complete, await RB Reconfiguration Complete, await RB Release 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, send RRC Connection Re-establishment, others)	
Ciphering related information				
>>Ciphering status	MP		Enumerated(Not started, Started)	
>>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
>>>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)	
>>Ciphering info per radio bearer	OP	1 to <maxRB>		
>>>RB identity	MP		RB identity 10.3.4.16	
>>>Downlink START	MP		START 10.3.3.36	
>>>Uplink START	MP		START 10.3.3.36	
Integrity protection related information				
>>Integrity protection status	MP		Enumerated(Not	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			started, Started)	
>>Signalling radio bearer specific integrity protection information	CV *IP*	4 to <maxSRBsetup>		
RB identity	CV *SRB5Plus*		RB identity 10.3.4.16	For RB#0-4 the RB identity is not required
>>> Uplink RRC HFN	MP		Bitstring (28)	
>>> Downlink RRC HFN	MP		Bitstring (28)	
>>> Uplink RRC Message sequence number	MP		Integer (0..15)	
>>> Downlink RRC Message sequence number	MP		Integer (0..15)	
>>Implementation specific parameters	OP		Bitstring (1..512)	
RRC IEs				
UE Information elements				
>>U-RNTI	MP		U-RNTI 10.3.3.45	
>>C-RNTI	OP		C-RNTI 10.3.3.8	
>>UE radio access Capability	MP		UE radio access capability 10.3.3.40	
Other Information elements				
>>Inter System message (inter system classmark)	OP		Inter-system message 10.8.6	
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 <MaxCN domains>		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	
Measurement Related Information elements				
>>For each ongoing measurement reporting	OP	1 to <MaxNoOfMeas>		
>>>Measurement Identity Number	MP		Measurement identity number 10.3.7.73	
>>>Measurement Command	MP		Measurement command 10.3.7.71	
>>>Measurement Type	CV Setup		Measurement type 10.3.7.75	
>>>Measurement Reporting Mode	OP		Measurement reporting mode 10.3.7.74	
>>>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	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			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 10.3.7.86	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.76	
>>>>>CHOICE report criteria	OP			
>>>>>>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>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	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.86	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.76	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-frequency measurement reporting criteria			Inter-frequency measurement reporting criteria 10.3.7.19	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>Inter-system				
>>>>>Inter-system cell info	OP		Inter-system cell info list 10.3.7.23	
>>>>>Inter-system measurement quantity	OP		Inter-system measurement quantity 10.3.7.29	
>>>>>Inter-system reporting quantity	OP		Inter-system reporting quantity 10.3.7.32	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.86	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.76	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-system measurement reporting criteria			Inter-system measurement reporting criteria 10.3.7.30	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>Traffic Volume				
>>>>>Traffic volume	OP		Traffic volume	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
measurement Object			measurement object 10.3.7.95	
>>>>>Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.96	
>>>>>Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.99	
>>>>>CHOICE report criteria	OP			
>>>>>>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.97	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>Quality				
>>>>>Quality measurement Object	OP		Quality measurement object	
>>>>>CHOICE report criteria	OP			
>>>>>>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.83	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>UE internal				
>>>>>UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.104	
>>>>>UE internal reporting quantity	OP		UE internal reporting quantity 10.3.7.107	
>>>>>CHOICE report criteria	OP			
>>>>>>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.105	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
Radio Bearer Information Elements				
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	
>>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	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>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 10.2.17	
>spare				(no data) Criticality: reject

Multi Bound	Explanation
MaxNoOfMeas	Maximum number of active measurements, upper limit 16

Condition	Explanation
Setup	The IE is mandatory when the IE Measurement command has the value "Setup", otherwise the IE is not needed.
Ciphering	The IE is mandatory 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 when the IE Integrity protection status has the value "started" and the ciphering counters need not be reinitialised, otherwise the IE is not needed.
SRB5Plus	The IE is mandatory when more than 5 signalling radio bearers are included
PDCP	The IE is mandatory when the PDCP Info IE is present, otherwise the IE is not needed.

14.10.2 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).

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			
> RADIO BEARER SETUP			RADIO BEARER SETUP 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	

14.10.3 RRC information, target RNC to source system

The RRC information, target RNC to source system is used to transfer information to another RAT, e.g., in case of handover to UTRAN. In this case, the RRC information concerns the "Handover To UTRAN Command" that is compiled by the target RNC but transferred via another RAT towards the UE, as specified in 8.3.6.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *case*	MP			
>handover to UTRAN			HANDOVER TO UTRAN COMMAND 10.2.10	
>spare				(no data) Criticality: reject

14.13.2.3a UE system specific capability

This Information Element contains capability information concerning other Radio Access Technologies.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE system specific capability	OP		Inter-system message 10.3.8.6	

3GPP TSG RAN WG2#16
Beijing, P.R. China, 9th –13th October, 2000

Document R2-002132
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	576r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2	**Date:**	2000-10-13

Subject:	General security clarifications

Work item:	

Category: *(only one category shall be marked with an X)*				**Release:**		
F	Correction	X		Phase 2		
A	Corresponds to a correction in an earlier release			Release 96		
B	Addition of feature			Release 97		
C	Functional modification of feature			Release 98		
D	Editorial modification			Release 99	X	
				Release 00		

Reason for change:

1) There must be a COUNT-C per CN domain for RLC TM as the HFN is initialised by START, which is per CN domain. Section 8.5.10.

2) In the case RRC messages are retransmitted repeatedly Section 8.5.12.1 would imply that the HFN is incremented for each of these messages as the RRC SN is the same for all messages that are repeated.

3) The RRC SN only exists when Integrity Protection is used. It is initialised as zero and included in the very first SECURITY MODE COMMAND and exits thereafter for all other messages.

Clauses affected:	8.1.3.4, 8.5.10, 8.5.12, 8.5.12.1, 8.6.3.5, 13.4.6

Other specs affected:			
Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:	

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.1.3.4 Reception of an RRC CONNECTION SETUP message by the UE

The UE shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION SETUP message with the value of the IE "Initial UE identity" in the most recent RRC CONNECTION REQUEST message sent by the UE.

If the values are different, the UE shall:

- ignore the rest of the message;

If the values are identical, the UE shall:

- stop timer T300, and act upon all received information elements as specified in 8.6, unless specified otherwise in the following;
- .- store the value of the IE "New U-RNTI";
- initiate the signalling link parameters according to the IE "RB mapping info";
- if neither the IE "PRACH info (for RACH)",nor the IE "Uplink DPCH info" is included:
  - let the physical channel of type PRACH that is given in system information to be the default in uplink to which the RACH is mapped to;
- if neither the IE "Secondary CCPCH info", nor the IE "Downlink DPCH info" is included:
  - start to receive the physical channel of type Secondary CCPCH that is given in system information to be used as default by FACH;
- enter a state according to subclause 8.5.7;
- transmit an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH after successful state transition per subclause 8.5.7, with the contents set as specified below:
  - include START [3G TS 33.102] values to be used in ciphering and integrity protection for each CN domain;
- if requested in the IE "Capability update requirement" sent in the RRC CONNECTION SETUP message:

  include its UTRAN-specific capabilities in the IE "UE radio access capability";
- if requested in the IE "Capability update requirement" sent in the RRC CONNECTION SETUP message:
  - include its inter-system capabilities in the IE "UE system specific capability".

When the successful delivery of the RRC CONNECTION SETUP COMPLETE message has been confirmed by RLC the UE shall:

- update its variable UE_CAPABILITY_TRANSFERRED which UE capabilities it has transmitted to the UTRAN;
- set the "Status" in the variable INTEGRITY_ PROTECTION_INFO to "Not started";
- set the "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to "Never been active";

and the procedure ends.

8.5.10 Hyper Frame Numbers

The hyper frame numbers (HFN) are used as MSBs of both the ciphering sequence number (COUNT-C) and the integrity sequence number (COUNT-I) for the ciphering and integrity protection algorithms, respectively. For non-transparent mode radio bearers there is an uplink and downlink COUNT-C per radio bearer and an uplink and downlink COUNT-I per signalling radio bearer. For all transparent mode radio bearers there is an ~~common~~ uplink and a ~~common~~ downlink COUNT-C and an ~~common~~ uplink and a ~~common~~ downlink COUNT-I. COUNT-C and COUNT-I are defined in Security Architecture, 3G TS 33.102.

The following hyper frame numbers are defined:

MAC-d HFN	24 bits	MSB of COUNT-C for data sent over RLC TM
RLC UM HFN	25 bits	MSB of COUNT-C for data sent over RLC UM
RLC AM HFN	20 bits	MSB of COUNT-C for data sent over RLC AM
RRC HFN	28 bits	MSB of COUNT-I

The START value is used to initialise the 20 most significant bits of all the hyper frame numbers and the remaining bits of the hyper frame numbers are set equal to zero.

8.5.12 Integrity protection

Integrity protection shall be performed on all RRC messages, with the following exceptions:

HANDOVER TO UTRAN COMPLETE

PAGING TYPE 1

PUSCH CAPACITY REQUEST

PHYSICAL SHARED CHANNEL ALLOCATION

RRC CONNECTION REQUEST

RRC CONNECTION SETUP

RRC CONNECTION SETUP COMPLETE

RRC CONNECTION REJECT

SYSTEM INFORMATION ~~(BROADCAST INFORMATION)~~

SYSTEM INFORMATION CHANGE INDICATION

TRANSPORT FORMAT COMBINATION CONTROL

NOTE: MEASUREMENT REPORT needs to be studied when used on UM as in some cases there could be synchronisation problems with the RRC SN.

For ~~CCCH and~~ each signalling radio bearer, the UE shall use two RRC hyper frame numbers,

- "Uplink RRC HFN";
- "Downlink RRC HFN".

and two message sequence numbers,

- "Uplink RRC Message sequence number";
- "Downlink RRC Message sequence number".

The above information is stored in the variable INTEGRITY_PROTECTION_INFO per ~~CCCH and~~ signalling radio bearer (RB 0-4).

Upon the first activation of integrity protection for an RRC connection, UE and UTRAN initialise the "Uplink RRC Message sequence number" and "Downlink RRC Message sequence number" for all signalling radio bearers to zero. The UE and UTRAN apply the sequence numbers for the RRC message activating integrity protection thereafter for all subsequent messages when integrity protection is activated. The RRC message sequence number (RRC SN) is incremented for every integrity protected RRC message. If the same RRC message is sent repeatedly (e.g. RRC CONNECTION RELEASE, RRC CONNECTION RELEASE COMPLETE) the corresponding RRC SN is not incremented.

8.5.12.1 Integrity protection in downlink

If the UE receives an RRC message on signalling radio bearer with RB identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is present the UE shall:

- check the value of the IE "RRC message sequence number" included in the IE "Integrity check info". If the RRC message sequence number is lower than ~~or equal to~~ the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO, the UE shall increment "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with one.
- calculate an expected message authentication code in accordance with subclause 8.5.12.3.
- compare the expected message authentication code with the value of the received IE "message authentication code" contained in the IE 'Integrity check info'.

- If the expected message authentication code and the received message authentication code are the same, the integrity check is successful.

- If the calculated expected message authentication code and the received message authentication code differ, the message shall be discarded.

If the UE receives an RRC message on signalling radio bearer with identity n, the "Status" in the variable INTEGRITY_PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is not present the UE shall discard the message.

8.6.3.5 Integrity protection mode info

The IE "Integrity protection mode info" defines the new integrity protection configuration. If the IE "Integrity protection mode info" is present, the UE shall check the IE "Integrity protection mode command" as part of the IE "Integrity protection mode info", and perform the following:

- if IE "Integrity protection mode command" has the value "start" and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Not started", the UE shall:

  - if the "Historical status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Never been active":

    - initialise the “Uplink RRC Message sequence number” and “Downlink RRC Message sequence number” for all signalling radio bearers to zero;

    - set the "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to the value "Has been active":

  - set the "Status" in the variable INTEGRITY_ PROTECTION_INFO to the value "Started";

  - perform integrity protection on the received message as described in subclause 8.5.12.1;

  - use the algorithm (UIA [3G TS 33.102]) indicated by the IE "Integrity protection algorithm" contained in the IE "Integrity protection mode info";

  - use the IE "Integrity protection initialisation number", contained in the IE "Integrity protection mode info" as the value of FRESH [3G TS 33.102].

- if IE "Integrity protection mode command" has the value "modified" and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started", the UE shall:

  - use the new integrity protection configuration in the downlink at the RRC sequence number indicated by the IE "Downlink integrity protection activation info", included in the IE "Integrity protection mode info";

  - perform integrity protection on the received message as described in subclause 8.5.12.1;

  - if present, use the algorithm indicated by the IE "Integrity protection algorithm" (UIA [TS 33.102]);

  - set the values of the IE "Uplink integrity protection activation info";

If the IE "Integrity protection mode info" is not present, the UE shall not change the integrity protection configuration.

13.4.6 INTEGRITY_PROTECTION_INFO

This variable contains information about the current status of the integrity protection in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Historical status	MP		Enumerated(Never been active, Has been active)	
Status	MP		Enumerated(Not started, Started)	
Signalling radio bearer specific integrity protection information	MP	1 to <maxSRBsetup>		Status information for RB#0-4 in that order
> Uplink RRC HFN	MP		Bitstring (28)	
> Downlink RRC HFN	MP		Bitstring (28)	
> Uplink RRC Message sequence number	MP		Integer (0..15)	
> Downlink RRC Message sequence number	MP		Integer (0..15)	

3GPP TSG-RAN WG2 Meeting #17
Sophia Antipolis, France, 13 - 17 Nov. 2000

R2-002198

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **577** ⌘ rev **-** ⌘ Current version: **3.4.1** ⌘

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

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

Title:	⌘	Clarification on Radio Bearer 0
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	***Date:*** ⌘ 06 Nov. 2000
Category:	⌘ **F**	***Release:*** ⌘ R99

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

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

Reason for change:	⌘	1) RBs except RB 0 are available in connected mode. But, RB 0 is configured in idle mode. 2) From RB 1 to RB 3 (optionally RB 4), UL and DL RLC modes are symmetric. Therefore, It can be misled that RB 0 is also symmetric. But, in the procedure of RRC Connection Establishment, UE sends RRC CONNECTION REQUEST message to the UTRAN on CCCH (RLC-TM). Upon receiving, UTRAN transmits RRC CONNECTION SETUP message or RRC CONNECTION REJECT message on CCCH (RLC-UM). Also, In clause 6.1 of 25.322, RLC-TM is only permitted for Uplink CCCH, and RLC- UM is only permitted for Downlink CCCH. It is not described clearly which RLC mode is used for RB 0 (CCCH). We clarify that RB 0 shall be used for all messages sent on the CCCH (UL: RLC-TM, DL: RLC-UM) 3) Because of the factors described in 2), RRC CONNECTION RELEASE message should transmitted on the CCCH (RLC-UM) instead of the CCCH (RLC-TM). * Contact: Jihyuk Choi(choijh@etri.re.kr)
Summary of change:	⌘	
Consequences if not approved:	⌘	

Clauses affected:	⌘	10.2, 10.2.38

Other specs Affected:	⌘	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/3G_Specs/CRs.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

10.2 Radio Resource Control messages

~~In connected mode,~~ RB 0, 1, 2, 3 and optionally 4 are available for usage by RRC messages using RLC-TM, RLC-UM and RLC-AM on the DCCH and CCCH. The UE and UTRAN shall select radio bearer for RRC messages using RLC-TM, RLC-UM or RLC-AM on the DCCH and CCCH, according to the following:

- RB 0 shall be used for all messages sent on the CCCH (UL: RLC-TM, DL: RLC-UM).
- RB 1 shall be used for all messages sent on the DCCH, when using RLC unacknowledged mode (RLC-UM).
- RB 2 shall be used for all messages sent on the DCCH, when using RLC acknowledged mode (RLC-AM), except for the INITIAL DIRECT TRANSFER, DOWNLINK DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages.
- RB 3 or 4 shall be used by the INITIAL DIRECT TRANSFER (RB 3), DOWNLINK DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages sent on the DCCH in RLC acknowledged mode (RLC-AM), as specified in subclause 8.1.8., 8.1.9 and 8.1.10.
- For RRC messages on the DCCH using RLC transparent mode (RLC-TM), the transparent signalling DCCH shall be used.
- RRC messages on the SHCCH are mapped either on RACH or on the USCH with the lowest assigned Transport Channel Id in the uplink and either on FACH or on the DSCH with the lowest assigned Transport Channel Id using RLC-TM.
  These messages are only specified for TDD mode.

When an RRC message is transmitted in DL on CCCH or SHCCH using RLC UM, RRC should indicate to RLC that a special RLC length indicator should be used [16]. The UE shall assume that this indication has been given. The special length indicator indicates that an RLC SDU begins in the beginning of an RLC PDU.

10.2.38 RRC CONNECTION RELEASE

This message is sent by UTRAN to release the RRC connection. The message also releases the signalling connection and all radio bearers between the UE and UTRAN.

RLC-SAP: UM ~~or TM~~

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
U-RNTI	CV-CCCH		U-RNTI 10.3.3.45	
Integrity check info	CH		Integrity check info 10.3.3.14	Integrity check info is included if integrity protection is applied
Number of RRC Message Transmissions	CH Cell_DCH		Number of RRC Message Transmissions 10.3.3.21	
Release cause	MP		Release cause 10.3.3.31	

Condition	Explanation
CCCH	This IE is only sent when CCCH is used.
Cell_DCH	This IE is present when UE is in CELL_DCH state.

3GPP TSG-RAN WG2 Meeting #17
Sophia Antipolis, France, 13 - 17 Nov. 2000

R2-002199

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **578** ⌘ rev **-** ⌘ Current version: **3.4.1** ⌘

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

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

Title:	⌘	Clarification on the transition of RRC state.
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	***Date:*** ⌘ 03 Nov. 2000
Category:	⌘	**F** ***Release:*** ⌘ R99

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

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

Reason for change:	⌘	It is not described clearly which messages initiate the transition of RRC state. Clarification is needed. * Contact: Jihyuk Choi (choijh@etri.re.kr)
Summary of change:	⌘	
Consequences if not approved:	⌘	

Clauses affected:	⌘	9.3		
Other specs Affected:	⌘	☐ 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/3G_Specs/CRs.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

9.3 UTRAN Connected Mode States and Transitions

9.3.1 CELL_DCH state

The CELL_DCH state is characterised by

- A dedicated physical channel is allocated to the UE in uplink and downlink.
- The UE is known on cell level according to its current active set.
- Dedicated transport channels, downlink and uplink (TDD) shared transport channels, and a combination of these transport channels can be used by the UE.

The CELL_DCH-state is entered from the Idle Mode through the setup of an RRC connection, or by establishing a dedicated physical channel from the CELL_FACH state.

A PDSCH may be assigned to the UE in this state, to be used for a DSCH. In TDD a PUSCH may also be assigned to the UE in this state, to be used for a USCH. If PDSCH or PUSCH are used for TDD, a FACH transport channel may be assigned to the UE for reception of physical shared channel allocation messages.

9.3.1.1 Transition from CELL_DCH to Idle Mode

Transition to Idle Mode is realised through the release of the RRC connection.

9.3.1.2 Transition from CELL_DCH to CELL_FACH state

Transition to CELL_FACH state occurs when all dedicated channels have been released, which may be

a) via explicit signalling (e.g. PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, RADIO BEARER SETUP, TRANSPORT CHANNEL RECONFIGURATION, etc.).

at the end of the time period for which the dedicated channel was allocated (TDD)

9.3.1.3 Transition from CELL_DCH to CELL_PCH state

Transition to CELL_PCH state occurs via explicit signalling (e.g. PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, RADIO BEARER SETUP, TRANSPORT CHANNEL RECONFIGURATION, etc.).

9.3.1.4 Transition from CELL_DCH to URA_PCH state

Transition to URA_PCH state occurs via explicit signalling (e.g. PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, RADIO BEARER SETUP, TRANSPORT CHANNEL RECONFIGURATION, etc.).

9.3.1.5 Radio Resource Allocation tasks (CELL_DCH)

For the DCH, several physical channel allocation strategies may be applied. The allocations can be either permanent (needing a DCH release message) or based on time or amount-of-data.

Resource allocation can be done separately for each packet burst with fast signalling on the DCH

For each radio frame the UE and the network indicate the current data rate (in uplink and downlink respectively) using the transport format combination indicator (TFCI). However, in TDD, DCH and DSCH or USCH may be mapped on different CCTrCHs, their TFCI are totally independent. DCH transmission is not modified by the simultaneous existence of DSCH/USCH. If the configured set of combinations (i.e. transport format set for one transport channel) are found to be insufficient to retain the QoS requirements for a transport channel, the network initiates a reconfiguration of the transport format set (TFS) for that transport channel. This reconfiguration can be done during or in between data transmission. Further, the network can reconfigure the physical channel allowing an increase or decrease of the peak data rate.

For the uplink data transmission, the UE reports the observed traffic volume to the network in order for the network to re-evaluate the current allocation of resources. This report contains e.g. the amount of data to be transmitted or the buffer status in the UE.

9.3.1.6 RRC Connection mobility tasks (CELL_DCH)

Depending on the amount and frequency of data macrodiversity (soft handover) may or may not be applied.

The RRC Connection mobility is handled by measurement reporting, soft handover and non-synchronised or synchronised hard handover procedures.

9.3.1.7 UE Measurements (CELL_DCH)

The UE shall perform measurements and transmit measurement reports according to the measurement control information.

The UE shall use the connected mode measurement control information received in other states until new measurement control information has been assigned to the UE.

9.3.1.8 Acquisition of system information (CELL_DCH)

FDD UEs with certain capabilities shall read system information broadcast on FACH.

TDD UEs shall read the BCH to acquire valid system information. For each acquisition, the UE may need different combinations of system information broadcast on BCH. The scheduling on the broadcast channel is done in such way that the UE knows when the requested information can be found.

9.3.2 CELL_FACH state

The CELL_FACH state is characterised by:

- No dedicated physical channel is allocated to the UE.
- The UE continuously monitors a FACH in the downlink.
- The UE is assigned a default common or shared transport channel in the uplink (e.g. RACH) that it can use anytime according to the access procedure for that transport channel.
- The position of the UE is known by UTRAN on cell level according to the cell where the UE last made a cell update.
- In TDD mode, one or several USCH or DSCH transport channels may have been established.

In the CELL_FACH substate the UE shall perform the following actions:

- listens to an FACH;
- listens to the BCH transport channel of the serving cell for the decoding of system information messages;
- initiates a cell update procedure on cell change of another UTRA cell;
- use C-RNTI assigned in the current cell as the UE identity on common transport channels except for when a new cell is selected;
- transmits uplink control signals and small data packets on the RACH;
- in FDD mode, transmits uplink control signals and larger data packets on CPCH when resources are allocated to cell and UE is assigned use of those CPCH resources;
- in TDD mode, transmits signalling messages or user data in the uplink and/or the downlink using USCH and/or DSCH when resources are allocated to the cell and the UE is assigned use of those USCH/DSCH resources;
- in TDD mode, transmits measurement reports in the uplink using USCH when resources are allocated to it in order to trigger a handover procedure in the UTRAN.

9.3.2.1 Transition from CELL_FACH to CELL_DCH state

A transition occurs, when a dedicated physical channel is established via explicit signalling (e.g. PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, RADIO BEARER SETUP, RRC CONNECTION REESTABLISHMENT, TRANSPORT CHANNEL RECONFIGURATION, etc.).

9.3.2.2 Transition from CELL_FACH to CELL_PCH state

The transition occurs when UTRAN orders the UE to move to CELL_PCH state, which is done via explicit signalling. (CELL UPDATE CONFIRM, RADIO BEARER RECONFIGURATION, etc.).

9.3.2.3 Transition from CELL_FACH to Idle Mode

Upon release of the RRC connection, the UE moves to the idle mode.

9.3.2.4 Transition from CELL_FACH to URA_PCH State

The transition occurs when UTRAN orders the UE to move to URA _PCH state, which is done via explicit signalling ~~e.g. Upon completion of the URA update procedure.~~ (URA UPDATE CONFIRM, RADIO BEARER RECONFIGURATION, etc.)

9.3.2.5 Radio Resource Allocation Tasks (CELL_FACH)

In the CELL_ FACH state the UE will monitor an FACH. It is enabled to transmit uplink control signals and it may be able to transmit small data packets on the RACH.

The network can assign the UE transport channel parameters (e.g. transport format sets) in advance, to be used when a DCH is used. Upon assignment of the physical channel for DCH, the UE shall move to CELL_DCH state and use the pre-assigned TFS for the DCH.

If no UE dedicated physical channel or transport channel configuration has been assigned, the UE shall use the common physical channel and transport channel configuration according to the system information.

For the uplink data transmission, the UE reports the observed traffic volume to the network in order for the network to re-evaluate the current allocation of resources. This report contains e.g. the amount of data to be transmitted or the buffer status in the UE.

When there is either user or control data to transmit, a selection procedure determines whether the data should be transmitted on a common transport channel, or if a transition to CELL_DCH should be executed. The selection is dynamic and depends on e.g. traffic parameters (amount of data, packet burst frequency).

In FDD mode, the UTRAN can assign CPCH resources to the UE in CELL_FACH state. When CPCH resources are assigned, the UE will continue to monitor FACHs. The UE may use the RACH to transmit uplink control signals and small data packets. The UE also may choose to transmit data packets, larger than those carried on the RACH, on the CPCH channel. The UE selects either the RACH or one of the CPCH channels to make maximum use of the capacity available on that channel.

In FDD mode, the UE provides the UTRAN with CPCH measurement data, which includes data, queue depth (current size of data buffers), average access time for each CPCH channel used, and average traffic volume on each CPCH channel used. With these measures, the UTRAN can reallocate network resources on a periodic basis. The UTRAN allocates CPCH Sets to each cell and assigns UEs to one of the cell's CPCH Sets. The UEs can dynamically access the CPCH resources without further UTRAN control.

In the TDD mode, the UTRAN can assign USCH / DSCH resources to the UE in CELL_FACH state. When USCH / DSCH resources are assigned, the UE will continue to monitor FACHs, depending on the UE capability. The UE may use the USCH / DSCH to transmit signalling messages or user data in the uplink and / or the downlink using USCH and / or DSCH when resources are allocated to cell and UE is assigned use of those USCH / DSCH.

For the uplink data transmission on USCH the UE reports to the network the traffic volume (current size of RLC data buffers), The UTRAN can use these measurement reports to re-evaluate the current allocation of the USCH / DSCH resources.

9.3.2.6 RRC Connection mobility tasks (CELL_FACH)

In this state the location of the UE is known on cell level. A cell update procedure is used to report to the UTRAN, when the UE selects a new cell to observe the common downlink channels of a new cell. Downlink data transmission on the FACH can be started without prior paging.

The UE monitors the broadcast channel and system information on BCCH of its own and neighbour cells and from this the need for the updating of cell location is identified.

The UE shall perform cell reselection and upon selecting a new UTRA cell, it shall initiate a cell update procedure. Upon selecting a new cell belonging to another radio access system than UTRA, the UE shall enter idle mode and make an access to that system according to its specifications.

9.3.2.7 UE Measurements (CELL_FACH)

The UE shall perform measurements and transmit measurement reports according to the measurement control information.

By default, the UE shall use the measurement control information broadcast within the system information. However, for measurements for which the network also provides measurement control information within a MEASUREMENT CONTROL message, the latter information takes precedence.

9.3.2.8 Transfer and update of system information (CELL_FACH)

The UE shall read the BCH to acquire valid system information. For each acquisition, the UE may need different combinations of system information broadcast on BCH. The scheduling on the broadcast channel is done in such way that the UE knows when the requested information can be found.

When the system information is modified, the scheduling information is updated to reflect the changes in system information transmitted on BCH. The new scheduling information is broadcast on FACH in order to inform UEs about the changes. If the changes are applicable for the UE, the modified system information is read on BCH.

9.3.3 CELL_PCH state

The CELL_PCH state is characterised by:

- No dedicated physical channel is allocated to the UE.
- The UE selects a PCH with the algorithm specified in subclause 8.5.7.6.3, and uses DRX for monitoring the selected PCH via an associated PICH.
- No uplink activity is possible.
- The position of the UE is known by UTRAN on cell level according to the cell where the UE last made a cell update in CELL_FACH state.

In this state the UE shall perform the following actions:

- monitor the paging occasions according to the DRX cycle and receive paging information on the PCH;
- listens to the BCH transport channel of the serving cell for the decoding of system information messages;
- initiates a cell update procedure on cell change;
- a UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in the CELL_PCH RRC state. If PCH and the FACH carrying CTCH are not mapped onto the same SCCPCH, UEs with basic service capabilities may not be able to monitor Cell Broadcast messages continuously in Cell_PCH state. In this case, UEs with basic service capabilities shall be capable to change from the SCCPCH that carries the PCH selected for paging to another SCCPCH which carries Cell Broadcast messages (i.e. the CTCH mapped to an FACH) and receive BMC messages during time intervals which do not conflict with the UE specific paging occasions.

The DCCH logical channel cannot be used in this sub. If the network wants to initiate any activity, it needs to make a paging request on the PCCH logical channel in the known cell to initiate any downlink activity.

9.3.3.1 Transition from CELL_PCH to CELL_FACH state

The UE is transferred to CELL_FACH state ~~either by paging from UTRAN or through any uplink access.~~

a) by paging from UTRAN (PAGING TYPE1 message)

b) through any uplink access (CELL UPDATE message)

9.3.3.2 Radio Resource Allocation Tasks (CELL_PCH)

In CELL_PCH state no resources have been granted for data transmission. For this purpose, a transition to another state has to be executed.

The UE may use Discontinuous Reception (DRX) in order to reduce power consumption. When DRX is used the UE needs only to receive at one paging occasion per DRX cycle. The UE may be instructed to use a specific DRX cycle length by the network. The UE shall determine its paging occasions in the same way as for Idle Mode, see [4].

9.3.3.3 RRC Connection mobility tasks (CELL_PCH)

In the CELL_PCH state, the UE mobility is performed through cell reselection procedures, which may differ from the one defined in [4].

The UE shall perform cell reselection and upon selecting a new UTRA cell, it shall move to CELL_FACH state and initiate a cell update procedure in the new cell. After the cell update procedure has been performed, the UE shall change its state back to CELL_PCH state if neither the UE nor the network has any more data to transmit.

Upon selecting a new cell belonging to another radio access system than UTRA, the UE shall enter idle mode and make an access to that system according to its specifications.

In case of low UE activity, UTRAN may want to reduce the cell-updating overhead by ordering the UE to move to the URA_PCH State. This transition is made via the CELL_FACH state. UTRAN may apply an inactivity timer, and optionally, a counter, which counts the number of cell updates e.g. UTRAN orders the UE to move to URA_PCH when the number of cell updates has exceeded certain limits (network parameter).

9.3.3.4 UE Measurements (CELL_PCH)

The UE shall perform measurements and transmit measurement reports according to the measurement control information.

The UE shall use the measurement control information according to the system information when no UE dedicated measurement control information has been assigned.

9.3.3.5 Transfer and update of system information (CELL_PCH)

The UE shall read the BCH to acquire valid system information. For each acquisition, the UE may need different combinations of system information broadcast on BCH. The scheduling on the broadcast channel is done in such way that the UE knows when the requested information can be found.

9.3.4 URA_PCH State

The URA_PCH state is characterised by:

- No dedicated channel is allocated to the UE.
- The UE selects a PCH with the algorithm specified in subclause 8.5.7.6.3, and uses DRX for monitoring the selected PCH via an associated PICH.
- No uplink activity is possible.
- The location of the UE is known on UTRAN Registration area level according to the URA assigned to the UE during the last URA update in CELL_FACH state.

In this state the UE performs the following actions:

- monitor the paging occasions according to the DRX cycle and receive paging information on the PCH;

- listens to the BCH transport channel of the serving cell for the decoding of system information messages;
- initiates a URA updating procedure on URA change;
- a UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in the URA_PCH RRC state. If PCH and the FACH carrying CTCH are not mapped onto the same SCCPCH, UEs with basic service capabilities may not be able to monitor Cell Broadcast messages continuously in Cell_PCH state. In this case, UEs with basic service capabilities shall be capable to change from the SCCPCH that carries the PCH selected for paging to another SCCPCH which carries Cell Broadcast messages (i.e. the CTCH mapped to an FACH) and receive BMC messages during time intervals which do not conflict with the UE specific paging occasions.

The DCCH logical channel cannot be used in this state. If the network wants to initiate any activity, it needs to make a paging request on the PCCH logical channel within the URA where the location of the UE is known. If the UE needs to transmit anything to the network, it goes to the CELL_FACH state. The transition to URA_PCH State can be controlled with an inactivity timer, and optionally, with a counter which counts the number of cell updates. When the number of cell updates has exceeded certain limits (a network parameter), then the UE changes to the URA_PCH State.

URA updating is initiated by the UE, which, upon the detection of the Registration area, sends the network the Registration area update information on the RACH of the new cell.

9.3.4.1 Transition from URA_PCH State to CELL_FACH State (URA_PCH)

Any activity causes the UE to be transferred to CELL_ FACH State.

a) Uplink access is performed by RACH (CELL UPDATE message)

b) by paging from UTRAN (PAGING TYPE1 message).

Note that the release of an RRC connection is not possible in the URA_PCH State. The UE will first move to CELL_FACH State to perform the release signalling.

3GPP TSG RAN WG2 Meeting #17
Sophia Antipolis, France, Nov. 13-17th 2000

Document R2-002346
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	580r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2	**Date:**	8-11-2000

Subject:	UPLCS measurements for RRC information to target RNC

Work item:	

Category: *(only one category shall be marked with an X)*			**Release:**	
F	Correction	X	Phase 2	
A	Corresponds to a correction in an earlier release		Release 96	
B	Addition of feature		Release 97	
C	Functional modification of feature		Release 98	
D	Editorial modification		Release 99	X
			Release 00	

Reason for change:	Addition of UPLCS Measurement Configuration in RRC information to target RNC

Clauses affected:	14.10.1

Other specs affected:			
Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

14.10.1 RRC Information to target RNC

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 SRNC information, 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 in a manner transparent to the UE.

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
CHOICE case	MP			
>Handover to UTRAN				
>>UE radio access capability	OP		UE radio access capability 10.3.3.40	
>>UE security information	OP		UE security information 14.13.2.2	
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	
>SRNC relocation				
>>State of RRC	MP		Enumerated (CELL_DCH, CELL_FACH,CELL_PCH, URA_PCH)	
>>State of RRC procedure	MP		Enumerated (await no RRC message, await RRC Connection Re-establishment Complete, await RB Setup Complete, await RB Reconfiguration Complete, await RB Release 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, send RRC Connection Re-establishment, others)	
Ciphering related information				
>>Ciphering status	MP		Enumerated(Not started, Started)	
>>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
>>>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)	
>>Ciphering info per radio bearer	OP	1 to <maxRB>		
>>>RB identity	MP		RB identity 10.3.4.16	
>>>Downlink START	MP		START 10.3.3.36	
>>>Uplink START	MP		START 10.3.3.36	
Integrity protection related information				

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>Integrity protection status	MP		Enumerated(Not started, Started)	
>>Signalling radio bearer specific integrity protection information	CV *IP*	4 to <maxSRBsetup>		
RB identity	CV *SRB5Plus*		RB identity 10.3.4.16	For RB#0-4 the RB identity is not required
>>> Uplink RRC HFN	MP		Bitstring (28)	
>>> Downlink RRC HFN	MP		Bitstring (28)	
>>> Uplink RRC Message sequence number	MP		Integer (0..15)	
>>> Downlink RRC Message sequence number	MP		Integer (0..15)	
>>Implementation specific parameters	OP		Bitstring (1..512)	
RRC IEs				
UE Information elements				
>>U-RNTI	MP		U-RNTI 10.3.3.45	
>>C-RNTI	OP		C-RNTI 10.3.3.8	
>>UE radio access Capability	MP		UE radio access capability 10.3.3.40	
Other Information elements				
>>Inter System message (inter system classmark)	OP		Inter-system message 10.8.6	
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 <MaxCN domains>		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	
Measurement Related Information elements				
>>For each ongoing measurement reporting	OP	1 to <MaxNoOfMeas>		
>>>Measurement Identity Number	MP		Measurement identity number 10.3.7.73	
>>>Measurement Command	MP		Measurement command 10.3.7.71	
>>>Measurement Type	CV Setup		Measurement type 10.3.7.75	
>>>Measurement Reporting Mode	OP		Measurement reporting mode 10.3.7.74	
>>>Additional Measurements list	OP		Additional measurements list 10.3.7.1	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>>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 10.3.7.86	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.76	
>>>>>CHOICE report criteria	OP			
>>>>>>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>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	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.86	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.76	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-frequency measurement reporting criteria			Inter-frequency measurement reporting criteria 10.3.7.19	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>Inter-system				
>>>>>Inter-system cell info	OP		Inter-system cell info list 10.3.7.23	
>>>>>Inter-system measurement quantity	OP		Inter-system measurement quantity 10.3.7.29	
>>>>>Inter-system reporting quantity	OP		Inter-system reporting quantity 10.3.7.32	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.86	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.76	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-system measurement reporting criteria			Inter-system measurement reporting criteria	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			10.3.7.30	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>Traffic Volume				
>>>>>Traffic volume measurement Object	OP		Traffic volume measurement object 10.3.7.95	
>>>>>Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.96	
>>>>>Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.99	
>>>>>CHOICE report criteria	OP			
>>>>>>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.97	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>Quality				
>>>>>Quality measurement Object	OP		Quality measurement object	
>>>>>CHOICE report criteria	OP			
>>>>>>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.83	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>UE internal				
>>>>>UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.104	
>>>>>UE internal reporting quantity	OP		UE internal reporting quantity 10.3.7.107	
>>>>>CHOICE report criteria	OP			
>>>>>>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.105	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>>>No reporting			NULL	
>>>>UPLCS				
>>>>>UPLCS reporting quantity	OP		UPLCS reporting quantity 10.3.7.xx67	
>>>>>CHOICE reporting criteria	OP			
>>>>>>UPLCS reporting criteria			UPLCS reporting criteria 10.3.7.xx66	
>>>>>>Periodical reporting criteria			Periodical reporting criteria 10.3.7.xx78	
>>>>>>No reporting				
Radio Bearer Information Elements				
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>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 10.2.17	
>spare				(no data) Criticality: reject

Multi Bound	Explanation
MaxNoOfMeas	Maximum number of active measurements, upper limit 16

Condition	Explanation
Setup	The IE is mandatory when the IE Measurement command has the value "Setup", otherwise the IE is not needed.
Ciphering	The IE is mandatory 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 when the IE Integrity protection status has the value "started" and the ciphering counters need not be reinitialised, otherwise the IE is not needed.
SRB5Plus	The IE is mandatory when more than 5 signalling radio bearers are included
PDCP	The IE is mandatory when the PDCP Info IE is present, otherwise the IE is not needed.

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***Document* R2-002354**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	584r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN #10 *list expected approval meeting # here ↑*
for approval [X] for information [ ]
strategic [ ] non-strategic [ ] *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 13 Nov 2000

Subject: Clarification to handling of satellite health issues

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[X]	**Release:**	Phase 2	[ ]
A	Corresponds to a correction in an earlier release	[ ]		Release 96	[ ]
B	Addition of feature	[ ]		Release 97	[ ]
C	Functional modification of feature	[ ]		Release 98	[ ]
D	Editorial modification	[ ]		Release 99	[X]
				Release 00	[ ]

Reason for change: During the resolution of CR 584 to 25.331 (R2-002214), the RAN2 plenary decided that an additional change to 25.331 should be accomplished. This change calls for the descriptive text preceding the table in section 10.3.7.47 to be reduced so that only the first sentence, "*The GPS Assistance Data element* …", remains.

Clauses affected: 10.2.49.8.16.1, 10.3.7.47, 10.3.7.48, 10.3.7.52

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

<<< NEXT MODIFIED SECTION >>>

10.2.49.8.16.1 System Information Block type 15.1

The system information block type 15.1 contains information useful for LCS DGPS Corrections. The DGPS Corrections message contents are based on a Type-1 message of version 2.2 of the RTCM-SC-104 recommendation for differential service. This format is a standard of the navigation industry and is supported by all DGPS receivers.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UTRAN Time Flag	MP		Bitstring(1)	
Node B Clock Drift Flag	MP		Bitstring(1)	
Node B Clock Drift	OP		Real(-0.1..0.1 by a proper step)	This IE provides an estimate of the drift rate of the Node B clock relative to GPS time. It has units of μsec/sec (ppm) and a range of ±0.1. This IE aids the UE in maintaining the relation between GPS and cell timing over a period of time. A positive value for Node B Clock Drift indicates that the Node B clock is running at a greater frequency than desired.
Reference Location	MP		As defined in TS23.032	Provides a prior knowledge of the approximate location of the UE
SFN	OP		Integer(0..4095)	The SFN that occurs at the Reference GPS TOW time
Reference GPS TOW	MP		Integer(0..6.047*10^{11})	GPS Time of Week with scaling factor of 1 usec. This field time-stamps the start of the frame with SFN=0.
Status/Health	MP		Enumerated(UDRE scale 1.0, UDRE scale 0.75, UDRE scale 0.5, UDRE scale 0.3, UDRE scale 0.2, UDRE scale 0.1, no data, invalid data)	This field indicates the status of the differential corrections.
DPGS information	CV-Status	1..<maxSat>		The following fields contain the DPGS corrections. If the Cipher information is included these fields are ciphered.
>SatID	MP		Enumerated (0…63)	The satellite ID number.
>IODE	MP		Integer(0..255)	This IE is the sequence number for the ephemeris for the particular satellite. The MS can use this IE to determine if new ephemeris is used for calculating the corrections that are provided in the broadcast message. This eight-bit IE is incremented for each new set of ephemeris for the satellite and may occupy the numerical range of [0, 239] during normal operations.
>UDRE	MP		Enumerated(	User Differential Range Error.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
			UDRE ≤ 1.0 m, 1.0m < UDRE ≤ 4.0m, 4.0m < UDRE ≤ 8.0m, 8.0m < UDRE)	This field provides an estimate of the uncertainty (1-σ) in the corrections for the particular satellite. The value in this field shall be multiplied by the UDRE Scale Factor in the Status field to determine the final UDRE estimate for the particular satellite.
>PRC	MP		Integer(-2047..2047)	Scaling factor 0.32 meters (different from [13])
>RRC	MP		Integer(-127..127)	Scaling factor 0.032 meters/sec (different from [13])
>Delta PRC2	MP		Integer(-127..127)	The difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2.
>Delta RRC2	MP		Integer(-7..7)	The difference in the pseudorange rate-of-change correction between the satellite's ephemeris identified by IODE and IODE-2.

~~NOTE: Each UDRE value shall be adjusted based on the operation of an Integrity Monitor (IM) function which exists at the network (SRNC, GPS server, or reference GPS receiver itself). Positioning errors derived at the IM which are excessive relative to DGPS expected accuracy levels shall be used to scale the UDRE values to produce consistency.~~

Condition	Explanation
Status/Health	This IE is mandatory if "status" is not equal to "no data" or "invalid data", otherwise the IE is not needed

<<< NEXT MODIFIED SECTION >>>

10.3.7.47 LCS GPS assistance data

The GPS Assistance Data element contains a single GPS assistance message that supports both UE-assisted and UE-based GPS methods. ~~An SMLC which may implement integrity monitoring algorithms~~~~Integrity Monitor (IM)~~ ~~should~~all ~~detect unhealthy (e.g., failed/failing) satellites and also should~~all ~~inform users of measurement quality in DGPS modes when satellites are healthy by setting User Differential Range Error (UDRE) parameters to indicate estimated differential error [13]. Excessively large pseudo range errors, as evidenced by the magnitude of the corresponding DGPS correction, shall be used to detect failed satellites. Unhealthy satellites should be detected within 10 seconds of the occurrence of the satellite failure. When unhealthy (e.g., failed/failing) satellites are detected, the assistance and/or DGPS correction data should~~all ~~not be supplied for these satellites. When the error in the IM computed position is excessive for solutions based upon healthy satellites only, DGPS users shall be informed of measurement quality through the supplied UDRE values.~~

~~NOTE: Certain types of GPS Assistance data may be derived, wholly or partially, from other types of GPS Assistance data.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
LCS GPS reference time	OP		LCS GPS reference time 10.3.7.53	
LCS GPS reference location	OP		Ellipsoid point with altitude defined in 23.032	The Reference Location field contains a 3-D location without uncertainty specified as per 23.032. The purpose of this field is to provide the UE with a priori knowledge of its location in order to improve GPS receiver performance.
LCS GPS DGPS corrections	OP		LCS GPS DGPS corrections 10.3.7.48	
LCS GPS navigation model	OP		LCS GPS navigation model 10.3.7.51	
LCS GPS ionospheric model	OP		LCS GPS ionospheric model 10.3.7.49	
LCS GPS UTC model	OP		LCS GPS UTC model 10.3.7.54	
LCS GPS almanac	OP		LCS GPS almanac 10.3.7.46	
LCS GPS acquisition assistance	OP		LCS GPS acquisition assistance 10.3.7.45	
LCS GPS real-time integrity	OP		LCS GPS real-time integrity 10.3.7.52	

<<< NEXT MODIFIED SECTION >>>

10.3.7.48 LCS GPS DGPS corrections

These fields specify the DGPS corrections to be used by the UE.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS TOW	MP		Integer(0..604799)	Seconds. This field indicates the baseline time for which the corrections are valid.
Status/Health	MP		Enumerated(UDRE scale 1.0, UDRE scale 0.75, UDRE scale 0.5, UDRE scale 0.3, UDRE scale 0.2, UDRE scale 0.1, no data, invalid data)	This field indicates the status of the differential corrections
Satellite information	MP	1 to <maxSat>		
>SatID	MP		Enumerated(0..63)	Satellite ID
>IODE	MP		Bit string(8)	This IE is the sequence number for the ephemeris for the particular satellite. The UE can use this IE to determine if new ephemeris is used for calculating the corrections that are provided in the broadcast message. This eight-bit IE is incremented for each new set of ephemeris for the satellite and may occupy the numerical range of [0, 239] during normal operations. See [13] for details
>UDRE	MP		Enumerated(UDRE ≤ 1.0 m, 1.0m < UDRE ≤ 4.0m, 4.0m < UDRE ≤ 8.0m, 8.0m < UDRE)	User Differential Range Error. This field provides an estimate of the uncertainty (1-σ) in the corrections for the particular satellite. The value in this field shall be multiplied by the UDRE Scale Factor in the common Corrections Status/Health field to determine the final UDRE estimate for the particular satellite. See [13] for details
>PRC	MP		Integer(-2047..2047)	Scaling factor 0.32 meters See (different from [13])
>RRC	MP		Integer(-127.. 127)	Scaling factor 0.032 meters/sec (different from [13])
>Delta PRC2	MP		Integer(-127..127)	Meters. The difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2.
>Delta RRC2	MP		Integer(-7..7)	Scaling factor 0.032 meters/sec. The difference in the rate of the change of the pseudorange correction between the satellite's

				ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2.
>Delta PRC3	MP		Integer(-127..127)	Meters. The difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris three issues ago IODE –3.
>Delta RRC3	MP		Integer(-7..7)	Scaling factor 0.032 meters/sec. The difference in the rate of the change of the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris three issues ago IODE –3.

~~NOTE: Each UDRE value shall be adjusted based on the operation of an Integrity Monitor (IM) function which exists at the network (SRNC, GPS server, or reference GPS receiver itself). Positioning errors derived at the IM which are excessive relative to DGPS expected accuracy levels shall be used to scale the UDRE values to produce consistency.~~

<<< NEXT MODIFIED SECTION >>>

10.3.7.52 LCS GPS real-time integrity

Contains parameters that describe the real-time status of the GPS constellation. Primarily intended for non-differential applications, the real-time integrity of the satellite constellation is of importance as there is no differential correction data by which the mobile can determine the soundness of each satellite signal. The Real-Time GPS Satellite Integrity data communicates the health of the constellation to the mobile via a list of bad satellites~~in real-time~~. The satellites identified in this IE should not be used for position fixes at the moment.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Satellite information	OP	1 to <maxSat>		N_BAD_SAT=the number of bad satellites included in this IE
>BadSatID	MP		Enumerated(0..63)	Satellite ID

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Sophia Antipolis, France, 13-17 November 2000

***Document* R2-002218**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.331	CR	585	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** 7.11.2000

Subject: Clarification on activation time

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Since the CFN may not be continuous after a reconfiguration, it should be clarified on which configuration the activation time is refering to. It is proposed to associate the activation time to the old configuration.

Clauses affected: 8.6.3.1

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: In the case of a blind handover, If the activation time is refering to the new configuration, the UE shall immediately leave the current cell to read the SFN on the new cell and then waits for the activation CFN on the new cell (bad impact on quality). By using the old configuration as reference, it avoids further delay after SFN decoding to switch on DPCH.

<--------- double-click here for help and instructions on how to create a CR.

8.6.3.1 Activation time

If the IE "Activation time" is present, the UE shall:

- activate the new configuration present in the same message as this IE at the indicated time.

NOTE: The new configuration is typically a dedicated physical channel present in the same message as the IE "Activation time". The Activation time corresponds to a CFN related to the old configuration.

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Sophia Antipolis, France, 13-17 November 2000

***Document* R2-002219**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.331	CR	586	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 7.11.2000

Subject: Clarification on activation time for ciphering in TM

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: When a change of the ciphering mode for TM radio bearers is ordered in a reconfiguration message (e.g RB setup, RB reconfigure, RB release, Transport channel reconfiguration or Physical channel reconfiguration), it should be clarified on which configuration the “Activation time for DPCH” is refering to.
It is proposed to perform the change of ciphering for TM RB after the change of configuration. In the opposite case a change of TM ciphering mode could occur before the sending of the complete message to the UTRAN.

Clauses affected: 8.6.3.4

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

<--------- double-click here for help and instructions on how to create a CR.

8.6.3.4 Ciphering mode info

The IE "Ciphering mode info" defines the new ciphering configuration. If the IE "Ciphering mode info" is present, the UE shall check the IE "Ciphering mode command" as part of the IE "Ciphering mode info", and perform the following:

- if IE "Ciphering mode command" has the value "start/restart", the UE shall:
  - start or restart ciphering, using the ciphering algorithm (UEA [3G TS 33.102]) indicated by the IE "Ciphering algorithm" as part of the new ciphering configuration. The new ciphering configuration shall be applied as specified below.
  - set the variable CIPHERING_STATUS to "Started".
- if the IE "Ciphering mode command" has the value "stop", the UE shall
  - stop ciphering. The new ciphering configuration shall be applied as specified below
  - set the variable CIPHERING_STATUS to "Not started".
- in case the IE "Ciphering mode command" has the value "start/restart" or "stop", the new ciphering configuration shall be applied as follows:
  - if the IE "Activation time for DPCH" is present in the IE "Ciphering mode info", the UE shall apply the new configuration at that time for radio bearers using RLC-TM. If the IE “Ciphering mode info” is present in a message reconfiguring RB, transport channel or physical channel, the indicated time in IE “Activation time for DPCH” corresponds to a CFN after that reconfiguration.
  - if the IE "Radio bearer downlink ciphering activation time info" is present in the IE "Ciphering mode info", the UE shall apply the following procedure for each radio bearer using RLC-AM and RLC-UM indicated by the IE "RB identity":
    - suspend data transmission on the radio bearer
    - store the "RLC send sequence number" for that radio bearer in the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, at which time the new ciphering configuration shall be applied.
    - when the data transmission of that radio bearer is resumed, the UE shall switch to the new ciphering configuration according to the following:
      - use the old ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number smaller than the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN.
      - use the new ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number greater than or equal to the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN
      - for a radio bearer using RLC-AM, when the RLC sequence number indicated in the IE "Radio bearer downlink ciphering activation time info" is not included in the RLC transmission window, the UE may release the old ciphering configuration for that radio bearer.

If the IE "Ciphering mode info" is not present, the UE shall not change the ciphering configuration.

3GPP TSG RAN WG2 meeting #17
Sophia Antipolis, France, 14th to 17th Nov. 2000

Document R2-002476

CHANGE REQUEST

25.331	CR	587r2	Current Version:	3.4.1

For submission to: TSG-RAN #10 — for approval [X] — for information [ ] — strategic [ ] — non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 24.11.2000

Subject: Measurement procedures and messages

Work item:

Category:

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change:

8.4

Measurement procedures

A reference to section 14 is added to quality measurements

UE positioning measurements are added to the list of measurements

The definition of the detected set is clarified so that the detected set is separated from the monitored set.

The "radio link related measurement" is clarified to mean intra-frequency/ inter-frequency/inter-system measurement.

It is clarified that detected set cells may be reported with the triggering event 1A and 1E.

"Immediate macrodiversity" is clarified to mean immediate establishment of macrodiversity.

It is clarified that radio link related measurement reports may be appended to a list of messages on common channels (e.g. RACH and CPCH) and not just the RACH.

8.4.1.2

Initiation

Editorial changes

8.4.1.3

Reception of MEASUREMENT CONTROL by the UE

Editorial changes

Usage of transaction identifier clarified.

8.4.1.4

Unsupported measurement in the UE

Usage of transaction identifier clarified.

8.4.1.5

Invalid MEASUREMENT CONTROL message

Usage of transaction identifier clarified.

8.4.1.6

Reception of MEASUREMENT CONTROL FAILURE message by the UTRAN.

Section is deleted as has been done to similar sections in other parts of the RRC protocol.

8.4.1.7

Measurements after transition from CELL_DCH to CELL_FACH

Section is edited heavily to make the procedures clearer.

The precedence of a dedicated MEASUREMENT CONTROL message for traffic volume measurements is explained. It is proposed that the UE refrain from updating the traffic volume measurement control information associated with the measurement identity from the BCH until the UTRAN explicitly releases the measurement with another MEASUREMENT CONTROL message

8.4.1.8

Measurements after transition from CELL_FACH to CELL_DCH state

The section is edited heavily.

8.4.1.9

Measurements after transition from idle mode to CELL_DCH state

Section edited to clarify procedures.

8.4.1.10

Measurements after transition from idle mode to CELL_FACH state

Section edited to clarify procedures.

8.4.1.11

Measurements when measurement object is no longer valid

Proposed changes deleted completely

8.4.2.3

Reception of a measurement report message by the UTRAN

Section is deleted to align to similar changes elsewhere in the specification.

8.6.6.14

DPCH Compressed Mode Info

In the current specification, the UTRAN cannot add a new transmission gap pattern sequence nor reconfigure an ongoing transmission gap pattern sequence without deleting all other parallel

ongoing transmission gap pattern sequences. The reason why this was specified like this previously was that the UE was required to make a crosscheck and detect forbidden transmission gap overlaps of all ongoing pattern sequences when a configuration was received. It was therefore simpler from the UE point of view to mandate the signalling of all pattern sequences in one go.

The requirement for the UE to check for forbidden overlaps was subsequently discarded because it introduced considerable time delays and increased UE complexity. Instead a runtime compressed mode error indication was specified. Therefore, the requirement for the UTRAN to signal all TGPS parameters of all ongoing TGPSs, when any kind of modification is introduced, is now obsolete. From the system point of view, it is desirable to be able to add a new TGPS without having to reconfigure all ongoing TGPSs. No extra UE complexity is introduced, on the contrary, a disruption to ongoing UE measurements is avoided when all TGPSs do not need to be restarted every time a reconfiguration of one TGPS is executed.

Secondly, the activation and deactivation is proposed to be specifically tied to a TGCFN. The exact activation moment of TGPSs for Node B are tied to TGCFN. With the current signalling, the RNC must keep track when TGCFN is elapsed in the Node B, and at the correct moment send an RRC: TrCH/PhyCH RECONFIGURATION or RRC: MEASUREMENT CONTROL message to the UE. Otherwise there will be U-plane PDUs lost due to unsync. activation of TGPSs in UL and DL. To handle this in controlled manner, we propose to include the TGCFN information included as a mandatory parameter every time that a TGPS is activated or deactivated. This will enable the RNC to make the activation and deactivation in synchrony with Iub/Iur procedures.

8.6.7.1

Measurement validity

The "release" alternative is removed from the IE, because the IE is optional in all measurement control information where the IE can be included. Therefore, the omission of this IE is enough to indicate that the measurement shall not be resumed.

The "measurement object" (transport channel identity) for traffic volume measurements is only applicable either in CELL_DCH (where the transport channel identity is a DCH identity) or in other connected mode states (where the transport channel identity is a RACH or CPCH identity.) So if a given measurement is to be used in all states, the measurement object cannot be specified.

8.6.7.3

Intra-frequency/Inter-frequency/Inter-system cell info list

Proposed changes to section deleted completely.

8.6.7.x

Intra-frequency measurement quantity

The erroneous case of not receiving primary CPICH tx power for pathloss measurements, is specified for the *"Intra-frequency measurement quantity"* IE. The primary CPICH tx power must be received in the intra-frequency cell info list, because the UE is not required to decode this information from the BCH of the neighbouring cell.

8.6.7.4

Inter-system measurement quantity

The erroneous case of not receiving GSM output power for pathloss measurements, is specified for the *"Inter-system measurement quantity"* IE. The output power must be received in the inter-system cell info list, because the UE is not required to decode this information from the BCH of the neighbouring cell.

8.6.7.x

Inter-system reporting quantity

It is proposed to clarify that "The UE shall include measured results in MEASUREMENT REPORT as specified in the IE " Inter-system reporting quantity" with the following restrictions:

-If the UE has not confirmed the BSIC of the measured cell, then

-If no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.

-If the UE has confirmed the BSIC of the measured cell, then

-If no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor " BSIC re-confirmation" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.

8.6.7.6

Reporting cell status

Editorial change to align to rephrasing in tabular notation.

8.6.7.x

Periodical reporting criteria

The usage of the Reporting interval and Amount of reporting IEs is explained.

8.6.7.x

Traffic volume measurement

It is explained that if the IE " Traffic volume measurement Object " is not included, the UE shall apply the measurement reporting criteria to all uplink transport channels. The signalling should support this kind of simple configuration, which enables the same reporting criteria to be applied even when transiting between the common and dedicated physical channels.

8.6.7.x

Traffic volume measurement reporting criteria

It is explained that "If the IE "UL transport channel id" is not included, the UE shall apply the measurement reporting criteria to all uplink transport channels indicated in the " Traffic volume measurement Object". If the UTRAN has not specified a traffic volume measurement object for a given measurement identity, the UE shall apply the measurement reporting criteria to all uplink transport channels, which it is using." This change supports the change in the "Traffic volume measurement" and additionally, corresponding text has also been removed from the tabular format.

10.2.17

MEASUREMENT REPORT

The *"Measured results on RACH"* IE is added to the MEASUREMENT REPORT message. This is to enable the UE to append neighbour cell measurements to the message in case of traffic volume measurement reporting in CELL_FACH state.

10.3.2.4

"Cell Selection and Re-selection info for SIB 11/12"

The usage of the "Cell Selection and Re-selection info for SIB 11/12" IE is broadened to cover GSM cells as well.

10.3.3.12

Failure cause and error information

The causes "unsupported measurement" (currently missing) and "incomplete configuration" (proposed in this CR) are added.

10.3.6.32, 10.3.6.33

DPCH compressed mode info, DPCH Compressed Mode Status Info

The exact activation moment of TGPSs for Node B are tied to TGCFN. With the current signalling, the RNC must keep track when TGCFN is elapsed in the Node B, and at the correct moment send an RRC: TrCH/PhyCH RECONFIGURATION or RRC: MEASUREMENT CONTROL message to the UE. Otherwise there will be U-plane PDUs lost due to unsync. activation of TGPSs in UL and DL.

To handle this in controlled manner, we propose to include the TGCFN information included as a mandatory parameter every time that a TGPS is activated or deactivated. This will enable the RNC to make the activation and deactivation in synchrony with Iub/Iur procedures.

10.3.7.3

Cell measured results

Note is removed.

10.3.7.13

Inter-frequency cell info list

The possibility to remove all previous inter-frequency cells is added. This is a useful option which enables the "resetting" of the neighbour list e.g. in situations where the lists on the UTRAN side and on the UE side are suspected to have inconsistencies.

10.3.7.19

Inter-frequency measurement reporting criteria

It is proposed that event-triggered periodic reporting is removed from inter-frequency measurements. Event-triggered periodic reports are most useful for active set updating, which is more time-critical than inter-frequency handovers. The "amount of reporting" and "reporting interval" IEs are therefore removed.

10.3.7.23

Inter-frequency measurement system information

There seems to be no need ot have an "inter-frequency measurement identity" on the BCH, because no measurement reports are sent as a consequence of receiving "Inter-system measurement system information". The procedure texts in section 8.4 only described the resuming of inter-frequency measurements,which had been previously initiated in CELL_DCH state (and this is also proposed to be removed in this CR). Similarly, the "Inter-frequency

measurement reporting criteria seems unnecessary". For the same reason, the need for an "inter-system measurement quantity" is very unclear, as the quality measure used for cell reselection is defined elsewhere. Therefore, it is proposed to remove these IEs.

10.3.7.23

Inter-system cell info list

The *"Qoffset$_{s,n}$"*, *"Qrxlevmin"* and *"Maximum allowed UL TX power"* and *"HCS neighbouring cell information"* IEs in the *"Inter-system cell info list"* IE are removed. Instead a conditional *"Cell selection and re-selection info"* IE is added. This is to align the inter-system list to the "*cell info list"* IE where intra- and inter-frequency lists are conveyed and where cell reselection related information is only conveyed on the BCH. There is no need to include cell reselection related parameters for CELL_DCH inter-system measurements, which are initiated in the MEASUREMENT CONTROL message.

Also, the possibility to remove all previous inter-system cells is added. This is a useful option which enables the "resetting" of the neighbour list e.g. in situations where the lists on the UTRAN side and on the UE side are suspected to have inconsistencies.

10.3.7.30

Inter-system measurement reporting criteria

It is proposed that event-triggered periodic reporting is removed from inter-system measurements. Event-triggered periodic reports are most useful for active set updating, which is more time-critical than inter-system handovers. The "amount of reporting" and "reporting interval" IEs are therefore removed.

10.3.7.31

Inter-system measurement system information

There seems to be no need ot have an inter-system measurement identity on the BCH, because no measurement reports are sent as a consequence of receiving "Inter-system measurement system information". For the same reason, the need for an "inter-system measurement quantity" is very unclear, as the quality measure used for cell reselection is defined elsewhere. Therefore, it is proposed to remove these IEs.

10.3.7.33

Intra-frequency cell info list

The possibility to remove all previous intra -frequency cells is added. This is a useful option which enables the "resetting" of the neighbour list e.g. in situations where the lists on the UTRAN side and on the UE side are suspected to have inconsistencies.

10.3.7.36

Intra-frequency measurement

The note that the measurement object is not included for detected set cells is removed, because the reporting of detected set cells needs to be explicitly assigned in the reporting cell status IE.

10.3.7.39

Intra-frequency measurement reporting criteria

The detected set cells is added as one option to the triggering condition of the event. The misleading explanation is of the amount of reporting IE is removed. The usage is explained in sections 14.1.4.1 and 14.1.4.2 instead.

10.3.7.29

Inter-system measurement quantity

The *"Measurement quantity for UTRAN quality estimate"* IE is changed from mandatory to optional in the *"Inter-system measurement quantity"* IE, because it is not necessary for the UTRAN to indicate this value for all types of inter-system measurements.

10.3.7.72

Measurement control system information

The *"Use of HCS"* and *"Cell_selection_and_reselection_quality_measure"* IEs are removed from the *"Measurement control system information"* IE. This is because the UE must acquire exactly the same information from system information block 3 or 4.

10.3.7.76

Measurement validity

The "release" alternative is removed from the IE, because the IE is optional in all measurement control information where the IE can be included. Therefore, the omission of this IE is enough to indicate that the measurement shall not be resumed.

10.3.7.78 Periodical reporting criteria

The misleading explanation is of the amount of reporting IE is removed. The usage is explained in sections 8.6.7.x Periodical reporting criteria instead.

10.3.7.80

Quality measured results list

The *"SIR"* measurement quantity is removed from the *"Quality measured results list"* IE. This is because FDD SIR has not been defined in 25.133. This means that the mapping of the UE reported value to a concrete dB value is also undefined. Therefore, the reported value is meaningless.

10.3.7.82

Quality measurement event results

The FFS is removed from the *"Quality measurement event results"* IE.

10.3.7.83

Quality measurement reporting

A spelling mistake is corrected from the *"Quality measurement reporting criteria"* IE.

10.3.7.84

Quality reporting quantity

The *"SIR"* measurement quantity is removed from the *"Quality reporting quantity"* IE.

10.3.7.86

Reporting cell status

The elements in reporting cell status are rephrased for clarification and the "cell types" are removed. The possibility of reporting detected set and/or active set cells is added.

10.3.7.97

Traffic volume measurement reporting criteria

In the current specification it is not possible to specify separate trigger conditions for the different traffic volume events (a difference compared to e.g. the intra-frequency measurements where the trigger conditions are specified per event). To correct this error it is proposed to include the IEs “Time to trigger” and “Time after trigger” into the loop for event specific

parameters.

It is proposed that the optional IE "Tx interruption after trigger" can also be configured per event id, as the other timer parameters. It is also proposed to delete the IE "amount of reporting" as configuring the "pending time after trigger" IE results in virtually the same behaviour in the UE.

The following text is removed: "If the transport channel identity is not included, the measurement reporting criteria are applied to all transport channels" and moved to section 8.6.7.x Traffic volume measurement reporting criteria

13.4.x

CELL_INFO_LIST

Proposed change removed

13.4.x

RACH_REPORTING

Proposed change removed

13.4.7

MEASUREMENT_IDENTITY

SIB types 11 and 12 added as reference

14.1.2

Intra-frequency reporting events for FDD

The sentence "Examples of intra-frequency reporting events that would be useful for intra-frequency handover evaluation are given below…" is removed.

14.1.2.1

Reporting event 1A

The sentence of measuring detected cells is clarified. The pathloss formula is corrected. An explanation is added that "If more than one cell triggers event 1A within the UE internal event evaluation period (defined in [25.133]) and fulfills the reporting criteria after the addition timer has elapsed , the UE shall report all of the triggering cells in the event results. The triggering cells shall be sorted in descending order according to the measured quantity."

14.1.2.2

Reporting event 1B

The pathloss formula is corrected. An explanation is added that "If more than one cell triggers event 1B within the UE internal event evaluation period (defined in [25.133]) and fulfills the reporting criteria after the drop timer has elapsed, the UE shall report all of the triggering cells in the event results. The triggering cells shall be sorted in descending order according to the measured quantity.

14.1.2.5

Reporting event 1E

The sentence of measuring detected cells is clarified.

14.1.4.1

Cell addition failure (FDD only)

The usage of "amount of reporting" is clarified.The figure is corrected to display CPICHs

instead of PCCPCHs

14.1.4.2

Cell replacement failure (FDD only)

The usage of "amount of reporting" is clarified.The figure is corrected to display CPICHs instead of PCCPCHs

14.1.5.4

Forbid a Primary CPICH to affect the reporting range (FDD only)

When all cells in the active set are defined as “Primary CPICH forbidden to affect the reporting range”, the UE is not able to send any intra-frequency measurement reports and the active set could not be updated. This is a possible dead lock situation for the soft/softer handover function.

To solve the problem it is proposed to include the following statement into chapter 14.1.5.4:

“The UE shall ignore that a Primary CPICH is forbidden to affect the reporting range if all of the following conditions are fulfilled:

The Primary CPICH is included in active set

All cells in active set are defined as Primary CPICHs forbidden to affect the reporting range.”

14.1.6

Reporting quantities

Unclear reporting quantities are removed from the list of examples.

14.2.1

Inter-frequency reporting events

A reference to a subclause is added.

14.3.2

GSM measurements in compressed mode

A new section is added to clarify the GSM measurements in compressed mode.

14.4.1

Traffic Volume Measurement Quantity

An FFS is removed.

14.x

The event description of quality measurement event 5A is added according to the explanation in R2-000813 (Source: Ericsson)

14.11

Correction of editoral inconsistencies in definitions and change of reference to a section which has been moved from 25.331 to 25.922.

Revision 1:

Three bullets in 8.4 removed, because more changes are needed to fully implement common neighbour cell lists.

10.3.7.72: IE:s removed by the earlier revision of this CR were brought back.

Revision 2:

Clauses affected: 8.4, 8.4.1.2, 8.4.1.3, 8.4.1.6, 8.4.1.7, 8.4.1.8, 8.4.1.9, 8.4.1.10,8.4.1.11, 8.4.2.3 ,8.6.7.1, 8.6.7.3 ,8.6.7, 10.2.17, , 10.2.19, 10.3.2.4,10.3.3.12, 10.3.7.13, 10.3.7.23, 10.3.7.23, 10.3.7.30,10.3.7.31, 10.3.7.33 , 10.3.7.36, 10.3.7.39 , 10.3.7.29, 10.3.7.72, 10.3.7.76, 10.3.7.78,10.3.7.80, 10.3.7.82 , 10.3.7.83 , 10.3.7.84, 10.3.7.86, 10.3.7.97, 14.1.2 ,14.1.2.1, 14.1.2.2, 14.1.2.5 , 14.1.4.1, 14.1.4.2,14.1.6 ,14.2.1, 14.3.2, 14.4.1, 14.x, 14.11

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: New changes to previous CR draft based on input from Nokia in blue, Motorola in yellow, Ericsson in green, NTT DoCoMo in grey Final revisions in purple

8.4 Measurement procedures

The UE measurements are grouped into 6 different categories, according to what the UE should measure.

The different types of measurements are:

- **Intra-frequency measurements**: measurements on downlink physical channels at the same frequency as the active set. 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. Detailed description is found in subclause 14.2.
- **Inter-system measurements**: measurements on downlink physical channels belonging to another radio access technology than UTRAN, e.g. PDC or GSM. Detailed description is found in subclause 14.3.
- **Traffic volume measurements**: measurements on uplink traffic volume. Detailed description is found in subclause 14.4.
- **Quality measurements**: Measurements of quality parameters, e.g. downlink transport block error rate. Detailed description is found in 14.x.
- **Internal measurements**: Measurements of UE transmission power and UE received signal level. Detailed description is found in subclause 14.5.
- **UE positioning measurements:** Measurements of UE position. -

~~The same type of measurements may be used as input to different functions in UTRAN.~~ The UE shall support a number of measurements running in parallel. The UE shall also support that each measurement is controlled and reported independently of every other measurement. ~~The exception to this indepence is that neighbour cell lists are reused in parallel measurements as follows:~~

- ~~For parallel intra-frequency measurements, the UE shall use one common intra-frequency neighbour cell list.~~
- ~~For parallel inter-frequency measurements, the UE shall use one common inter-frequency neighbour cell list.~~
- ~~For parallel inter-system measurements, the UE shall use one common inter-system neighbour cell list.~~

Cells that the UE is monitoring (e.g. for handover measurements) are grouped in the UE into three different categories:

1. Cells, which belong to the **active set.** User information is sent from all these cells and they are simultaneously demodulated and coherently combined. In FDD, these cells are involved in soft handover. In TDD the active set always comprises of one cell only.
2. Cells, which are not included in the active set, but are monitored according to a neighbour list assigned by the UTRAN belong to the **monitored set.**
3. Cells, which are not included in the active set nor in the monitored set, and are detected by the UE without receiving a neighbour list from the UTRAN, belong to the **detected set.** Intra-frequency measurements of the unlisted set is required only of UEs in CELL_DCH state.

~~NOTE: The cells of the monitored set are not excluded from the detected set.~~

UTRAN may ~~start~~ control a measurement in the UE either by broadcasted system information and/or by transmitting a MEASUREMENT CONTROL message. This message includes the following measurement control information:

1. **Measurement type**: One of the types listed above describing what the UE shall measure.
2. **Measurement identity ~~number~~**: A reference number that should be used by the UTRAN when modifying or releasing the measurement and by the UE in the measurement report.
3. **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.

4. **Measurement objects:** The objects the UE shall measure ~~on~~, and corresponding object information (for e.g. a neighbour cell list).
5. **Measurement quantity:** The quantity the UE shall measure. This also includes the filtering of the measurements. (for e.g. CPICH E_c/N_0)
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. ~~The events are described for each measurement type in clause 14.~~
8. **Reporting mode**: This specifies whether the UE shall transmit the measurement report using AM or UM RLC.

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

When the reporting criteria are fulfilled, i.e. a specified event occurred or the time since last report indicated for periodical reporting has elapsed, the UE shall send a MEASUREMENT REPORT message to UTRAN.

~~In idle mode, the UE shall perform measurements according to the measurement control information included in System Information Block Type 11, which is transmitted on the BCCH.~~

In CELL_FACH, CELL_PCH or URA_PCH state, the UE shall perform measurements according to the measurement control information included in System Information Block Type 12, which is transmitted on the BCCH. If the UE has not received System Information Block Type 12, it shall perform measurements according to the measurement control information included in System Information Block Type 11, which is transmitted on the BCCH.

In CELL_DCH state, the UE ~~shall~~ may be requested by UTRAN to report ~~radio link related~~ intra-frequency, inter-frequency and inter-system measurements to the UTRAN with a MEASUREMENT REPORT message. The UE may also be requested by the UTRAN to report unlisted cells, which it has detected. The triggering event for the UE to send a MEASUREMENT REPORT message for a detected set is ~~that a detected cell exceeds an absolute threshold~~defined in measurement events 1A and IE in section 14.

In order to receive information for the immediate establishment of ~~immediate~~ macrodiversity (FDD) or to support the DCA algorithm (TDD), the UTRAN may also ~~request~~ indicate to the UE in System Information Block Type 11 or 12 to append radio link related measurement reports to the following messages when they are sent ~~on the RACH~~common transport channels (e.g. RACH, CPCH):

- RRC CONNECTION REQUEST message sent to establish an RRC connection;
- RRC CONNECTION RE-ESTABLISHMENT REQUEST message sent to re-establish an RRC connection;
- INITIAL DIRECT TRANSFER message sent uplink to establish a signalling connection;
- CELL UPDATE message sent to respond to a UTRAN originated page;
- MEASUREMENT REPORT message sent to report uplink traffic volume;
- CAPACITY REQUEST message sent to request PUSCH capacity (TDD only).

~~NOTE: Whether or not measured results can be appended to other messages and in other scenarios is FFS.~~

8.4.1 Measurement control

Figure 55: Measurement Control, normal case

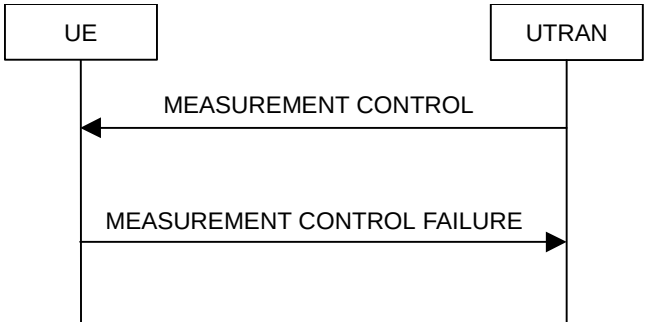

Figure 56: Measurement Control, UE reverts to old measurements

8.4.1.1 General

The purpose of the measurement control procedure is to Setup, modify or release a measurement in the UE.

8.4.1.2 Initiation

The UTRAN may request a measurement by the UE to be setup, modified or released with a MEASUREMENT CONTROL message, which is transmitted on the downlink DCCH using AM RLC.

The UTRAN should take the UE capabilities into account when a measurement is assigned to the UE.

When a new measurement is ~~set up~~initiated, UTRAN should set the IE "Measurement identity number" to a value, which is not used for other measurements. UTRAN may use several "Measurement identity number " ~~within~~ a same "Measurement type". In case of setting several "Measurement identity numbers" within a same "Measurement type", "Measurement object" can be set differently for each measurement with different "Measurement identity numbers". If no "Measurement object" is indicated for additional measurement within a same "Measurement type" in case of "Measurement type" = "Intra-frequency", it implies that only active set cells are the "Measurement objects".

When a current measurement is modified or released, UTRAN should set the IE "Measurement identity number" to a value, which is used for the ~~current~~ measurement being modified or released. In case of modifying IEs within a "Measurement identity number", it is not needed for UTRAN to indicate the IEs other than modifying IEs, and the UE ~~continuously uses~~ continues to use the current values of the IEs which are not modified.

UTRAN should take the UE capabilities into account when a measurement is assigned to the UE.

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in 8.6 unless otherwise specified below.

The UE shall:

- read the IE "Measurement command";
- if the IE "measurement command" has the value "setup":
  - store this measurement in the variable MEASUREMENT_IDENTITY according to the IE "measurement identity number";
  - store into the variable MEASUREMENT_IDENTITY the control information defined by IE "Measurement object", the IE "Measurement quantity", the IE "Reporting quantity", the IE "Measurement reporting criteria", the IE "Measurement validity", the IE "Reporting mode" and if present all IEs "Additional measurement identity number", which are valid for this measurement type; and
  - for measurement types "inter-system measurement" or "inter-frequency measurement":
    - begin measurements according to the stored control information for this measurement identity number optionally with the use of compressed mode if at least one compressed mode pattern sequence is simultaneously activated with inclusion of the IE "DPCH compressed mode status info"; or

- for any other measurement type:
  - begin measurements according to the stored control information for this measurement identity number.
- if the IE "Measurement command" has the value "modify":
  - retrieve the stored measurement information in variable MEASUREMENT_IDENTITY associated with the identity indicated ~~in~~ by the IE "measurement identity number";
  - ~~-~~ if any of the ~~IEs "measurement object",~~ IE "measurement quantity", IE "reporting quantity", IE "measurement reporting criteria", IE "measurement validity", IE "reporting mode" or IE "Additional measurement identity number" are present in the MEASUREMENT CONTROL message, the control information defined by ~~that~~ these IEs shall replace the corresponding stored information in variable MEASUREMENT_IDENTITY;
  - store the new set of IEs and associate them with the measurement identity number;
  - resume the measurements according to the new stored measurement control information.
- if the IE "measurement command has the value "release":
  - terminate the measurement associated with the identity given in the IE "measurement identity number";
  - clear all stored measurement control information related associated to this measurement identity number in variable MEASUREMENT_IDENTITY.
- if the IE "DPCH Compressed Mode Status Info" is present, the UE shall:
  - activate the pattern sequence stored in variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" and begin the inter-frequency and/or inter-system measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
  - deactivate the pattern sequence stored in variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "deactivate" and terminate the inter-frequency and/or inter-system measurements corresponding to the pattern sequence measurement purpose of each deactivated pattern sequence;

- clear the entry for the MEASUREMENT CONTROL message in the table “Accepted transactions” in the variable TRANSACTIONS.

After the above actions have been performed, the procedure ends.

8.4.1.4 Unsupported measurement in the UE

If UTRAN instructs the UE to perform a measurement that is not supported by the UE, the UE shall:

- retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received;
- transmit a MEASUREMENT CONTROL FAILURE message on the DCCH using AM RLC.

- set the IE “RRC transaction identifier” in the MEASUREMENT CONTROL FAILURE message to
  - the value of “RRC transaction identifier” in the entry for the MEASUREMENT CONTROL message in the table “Accepted transactions” in the variable TRANSACTIONS, and;
- clear that entry;

The UE shall set the cause value in IE "failure cause" to "unsupported measurement".

8.4.1.5 Invalid MEASUREMENT CONTROL message

If the MEASUREMENT CONTROL message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- transmit a MEASUREMENT CONTROL FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the MEASUREMENT CONTROL FAILURE message to
  - the value of "RRC transaction identifier" in the entry for the MEASUREMENT CONTROL message in the table "Rejected transactions" in the variable TRANSACTIONS, and;
  - clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the successful delivery of the MEASUREMENT CONTROL FAILURE message has been confirmed by RLC:
  - resume normal operation as if the invalid MEASUREMENT CONTROL message has not been received and the procedure ends.

~~8.4.1.6 Reception of the MEASUREMENT CONTROL FAILURE message by the UTRAN~~

~~When the UTRAN receives a MEASUREMENT CONTROL FAILURE message the procedure ends.~~

8.4.1.7 Measurements after transition from CELL_DCH to CELL_FACH state

The UE shall obey the follow rules for different measurement types after transiting from CELL_DCH to CELL_FACH state:

8.4.1.7.1 Intra-frequency measurement

The UE shall stop intra-frequency type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_FACH state, the UE shall begin monitoring neighbouring cells listed in the "intra-frequency cell info" received in "System Information Block 12" (or "System Information Block 11").

If the UE has no previously assigned, valid intra-frequency measurement for CELL_DCH state, the UE shall store "intra-frequency measurement reporting criteria", from "System Information Block 12" (or "System Information Block 11"), for use after a subsequent transition to CELL_DCH state.

If the UE receives the "Intra-frequency reporting quantity for RACH Reporting" and "Maximum number of Reported cells on RACH" IEs from "System Information Block 12" (or "System Information Block 11"), the UE use this information for reporting measured results in RACH messages.

8.4.1.7.2 Inter-frequency measurement

The UE shall stop the inter-frequency type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_FACH state, the UE shall begin monitoring neighbouring cells listed in the "inter-frequency cell info" received in "System Information Block 12" (or "System Information Block 11").

The UE shall not measure on other frequencies except at the measurement occasions given in 8.5.12.

8.4.1.7.3 Inter-system measurement

The UE shall stop the inter-system type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_FACH state, the UE shall begin monitoring neighbouring cells listed in the "inter-system" cell info" received in "System Information Block 12" (or "System Information Block 11").

The UE shall not measure on other systems except at the measurement occasions given in 8.5.12.

8.4.1.7.4 Quality measurement

Upon transition from CELL_DCH to CELL_FACH state, the UE shall take the following actions:

- stop quality type measurement reporting.
- retrieve each set of measurement control information of measurement type "quality" stored in the variable MEASUREMENT_IDENTITY and delete all control information associated to the measurement identity.~~The UE shall stop the quality type measurement reporting assigned in a MEASUREMENT CONTROL message after transition from CELL_DCH to CELL_FACH state.~~

8.4.1.7.5 UE internal measurement

Upon transition from CELL_DCH to CELL_FACH state, the UE shall take the following actions:

- stop UE internal measurement type measurement reporting;
- retrieve each set of measurement control information of measurement type "UE internal" stored in the variable MEASUREMENT_IDENTITY and delete all control information associated to the measurement identity.~~The UE shall stop the UE internal measurement reporting type of measurement assigned in a MEASUREMENT CONTROL message.~~

8.4.1.7.6 Traffic volume measurement

Upon transition from CELL_DCH to CELL_FACH state, the UE shall take the following actions:

- retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT_IDENTITY; and~~The UE shall stop or continue traffic volume type measurement reporting assigned in a MEASUREMENT CONTROL message according to the following rules:~~
  - if the optional IE "measurement validity" for this measurement has ~~been assigned to value "release":~~not been included:
    - delete the measurement associated with the variable ~~MEASUREMENT IDENTITY~~MEASUREMENT_IDENTITY.
  - if the IE "measurement validity" for the measurement has been ~~assigned to value "resume",~~ been included, and the IE "UE state ~~for reporting~~" has been assigned to value "CELL_DCH":
    - stop measurement reporting;
    - save the measurement associated with the variable ~~MEASUREMENT IDENTITY~~MEASUREMENT_IDENTITY to be used after the next transition to CELL_DCH state.
  - if the IE "measurement validity" for the measurement has ~~been assigned to value "resume",~~ been included, and the IE "UE state ~~for reporting~~" has been assigned to value "all states":
    - continue measurement reporting.
  - if the UE has previously stored a measurement, for which the IE "measurement validity" has ~~been assigned to value "resume"~~ been included and for which the IE "UE state ~~for reporting~~" has been assigned to value "all states except CELL_DCH":
    - resume this measurement and associated reporting.

- If no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_FACH state, ~~the UE shall begin a traffic volume type measurement according to traffic volume measurement type information received in "System Information Block 12" (or "System Information Block 11").~~

  - monitor the BCH in order to receive "System Information Block 11". Upon reception of "system information block type 11",

    - read the IE "Traffic volume measurement system information" and store the measurement control information in variable MEASUREMENT_IDENTITY;

    - begin traffic volume measurement reporting according to the assigned information.

  - if the "System Information Block 12" is transmitted in the cell, monitor the BCH in order to receive "System Information Block 12". Upon reception of "system information block type 12",

    - read the IE "Traffic volume measurement system information", and update the measurement control information in variable MEASUREMENT_IDENTITY;

    - begin traffic volume measurement reporting according to the assigned information.

- If the UE in CELL_FACH state receives a MEASUREMENT CONTROL message, which indicates the same measurement identity as that stored in variable MEASUREMENT_IDENTITY, the UE shall

  - update the stored information with the traffic volume measurement control information in variable MEASUREMENT_IDENTITY, and

  - refrain from updating the traffic volume measurement control information associated with this measurement identity from the BCH until the UTRAN explicitly releases this measurement with another MEASUREMENT CONTROL message.

NOTE: The UE may receive "system information block type 12 " before "system information block type 11" and can store received information before receiving "system information block type 11". However, the UE shall not apply any information received in system information block type 12 before having received information from "system information block type 11".

8.4.1.8 Measurements after transition from CELL_FACH to CELL_DCH state

The UE shall obey the follow rules for different measurement types after transiting from CELL_FACH to CELL_DCH state:

8.4.1.8.1 Intra-frequency measurement

If the UE has previously in CELL_DCH state stored an intra-frequency measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting. If the UE has performed cell reselection whilst out of CELL_DCH state, the UE shall not resume the measurement.

If the UE has no previously assigned measurement, it shall continue monitoring the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). If the "intra-frequency measurement reporting criteria" IE was included in "System Information Block 12" (or "System Information Block 11"), the UE shall send the MEASUREMENT REPORT message when reporting criteria are fulfilled. When the UE receives a MEASUREMENT CONTROL message including an intra-frequency measurement type assignment, the UE shall stop monitoring and measurement reporting for the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). It shall also delete the measurement reporting criteria received in "System Information Block 12" (or "System Information Block 11").

8.4.1.8.2 Inter-frequency measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). If the UE has previously stored an inter-frequency measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE

state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

8.4.1.8.3 Inter-system measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency system info" IE in "System Information Block 12" (or "System Information Block 11"). If the UE has previously stored an inter-system measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

8.4.1.8.4 Traffic volume measurement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall take the following actions:

- retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT_IDENTITY; ~~The UE shall stop or continue traffic volume type measurement reporting assigned in a MEASUREMENT CONTROL message sent on the FACH according to the following rules:~~

  - If the optional IE "measurement validity" for this measurement has not been ~~assigned to value "release", included, the UE shall~~ delete the measurement associated with the variable ~~MEASUREMENT IDENTITY~~MEASUREMENT_IDENTITY.

  - If the IE "measurement validity" for the measurement has been ~~assigned to value "resume",~~ included, and the IE "UE state ~~for reporting~~" has been assigned to value "CELL_FACH", ~~the UE shall~~ stop measurement reporting and save the measurement associated with the variable ~~MEASUREMENT IDENTITY~~MEASUREMENT_IDENTITY to be used after the next transition to CELL_FACH state.

  - If the IE "measurement validity" for the measurement has ~~been assigned to value "resume",~~ included, and the IE "UE state ~~for reporting~~" has been assigned to value "all states", ~~the UE shall~~ continue measurement reporting.

  - If the ~~UE has previously stored a measurement, for which the~~ IE "measurement validity" has been ~~assigned to value "resume"~~ included and ~~for which~~ the IE "UE state ~~for reporting~~" has been assigned to value "CELL_DCH", ~~the UE shall~~ resume this measurement and associated reporting.

- If no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_DCH state, the UE shall continue an ongoing traffic volume type measurement, which was assigned in ~~"System Information Block 11" and "System Information Block 12" (if transmitted in the cell), "System Information Block 12" (or "System Information Block 11")~~

- If the UE in CELL_DCH state receives a MEASUREMENT CONTROL message, which indicates the same measurement identity as that stored in variable MEASUREMENT_IDENTITY, the UE shall

  - update the stored information with the traffic volume measurement control information in variable MEASUREMENT_IDENTITY

~~Traffic volume type measurement control parameters assigned in a MEASUREMENT CONTROL message shall always supersede parameters conveyed in "System Information Block 12" (or "System Information Block 11"). If the UE receives a MEASUREMENT CONTROL message including an traffic volume measurement type assignment, the UE shall delete the traffic volume measurement control information received in "System Information Block 12" (or "System Information Block 11").~~

8.4.1.9 Measurements after transition from idle mode to CELL_DCH state

The UE shall obey the follow rules for different measurement types after transiting from idle mode to CELL_DCH state:

8.4.1.9.1 Intra-frequency measurement

The UE shall continue monitoring the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). If the "intra-frequency measurement reporting criteria" IE

was included in "System Information Block 12" (or "System Information Block 11"), the UE shall send the MEASUREMENT REPORT message when reporting criteria are fulfilled.

When the UE receives a MEASUREMENT CONTROL message including an intra-frequency measurement type assignment, the UE shall stop monitoring and measurement reporting for the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). It shall also delete the measurement reporting criteria received in "System Information Block 12" (or "System Information Block 11").

8.4.1.9.2 Inter-frequency measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11").

8.4.1.9.3 Inter-system measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency system info" IE in "System Information Block 12" (or "System Information Block 11").

8.4.1.9.4 Traffic volume measurement

Upon transition from idle mode to CELL_DCH state, the UE shall take the following actions:

- ~~The UE shall~~ begin a traffic volume type measurement, which was assigned in "System Information Block 11" and "System Information Block 12"(if transmitted in the cell).~~"System Information Block 12" (or "System Information Block 11").~~

8.4.1.10 Measurements after transition from idle mode to CELL_FACH state

The UE shall obey the follow rules for different measurement types after transiting from idle mode to CELL_FACH state:

8.4.1.10.1 Intra-frequency measurement

The UE shall begin monitoring neighbouring cells listed in the "intra-frequency cell info" received in "System Information Block 12" (or "System Information Block 11").

If the UE receives "intra-frequency measurement reporting criteria", from "System Information Block 12" (or "System Information Block 11"), the UE shall store this information to use after a subsequent transition to CELL_DCH state.

If the UE receives the "Intra-frequency reporting quantity for RACH Reporting" and "Maximum number of Reported cells on RACH" IEs from "System Information Block 12" (or "System Information Block 11"), the UE use this information for reporting measured results in RACH messages.

8.4.1.10.2 Inter-frequency measurement

The UE shall begin monitoring neighbouring cells listed in the "inter-frequency cell info" received in "System Information Block 12" (or "System Information Block 11").

The UE shall not measure on other frequencies except at the measurement occasions given in 8.5.12.

8.4.1.10.3 Inter-system measurement

The UE shall begin monitoring neighbouring cells listed in the "inter-system" cell info" received in "System Information Block 12" (or "System Information Block 11").

The UE shall not measure on other systems except at the measurement occasions given in 8.5.12.

8.4.1.10.4 Traffic volume measurement

Upon transition from idle mode to CELL_FACH state, the UE shall take the following actions:

- monitor the BCH in order to receive "System Information Block 11". Upon reception of "system information block type 11",
  - read the IE "Traffic volume measurement system information" and store the measurement control information in variable MEASUREMENT_IDENTITY;
  - begin traffic volume measurement reporting according to the assigned information.
- if the "System Information Block 12" is transmitted in the cell, monitor the BCH in order to receive "System Information Block 12". Upon reception of "system information block type 12",
  - read the IE "Traffic volume measurement system information", and update the measurement control information in variable MEASUREMENT_IDENTITY;
  - continue traffic volume measurement reporting according to the updated information.

~~The UE shall begin a traffic volume type measurement according to traffic volume measurement type information received in "System Information Block 12" (or "System Information Block 11").~~

8.4.1.11 Measurements when measurement object is no longer valid

8.4.1.11.1 Traffic volume measurement

If UE is no longer using the transport channel that is specified in "traffic volume measurement object", UE shall ignore any measurements that are assigned to that transport channel. If none of the transport channels that are specified in "traffic volume measurement object" is being used, UE shall release that particular measurement and its measurement ID.

8.4.2 Measurement report

Figure 57: Measurement report, normal case

8.4.2.1 General

The purpose of the measurement reporting procedure is to transfer measurement results from the UE to UTRAN.

8.4.2.2 Initiation

In CELL_DCH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are ~~fulfilled~~ met for any ongoing measurements that are being performed in the UE.

In CELL_FACH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are ~~fulfilled~~ met for an ongoing traffic volume measurement which is being performed in the UE.

If the Radio Bearer associated with the MEASUREMENT_IDENTITY fulfilling the reporting criteria for an ongoing traffic volume measurement is mapped on transport channel of type USCH, the UE shall initiate the "PUSCH CAPACITY REQUEST" procedure instead of transmitting a MEASUREMENT REPORT (TDD Only).

In CELL_PCH or URA_PCH state, the UE shall first perform the cell update procedure according to subclause 8.3.1, using the cause "uplink data transmission", in order to transit to CELL_FACH state and then transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable

MEASUREMENT_IDENTITY are fulfilled for an ongoing traffic volume measurement which is being performed in the UE.

The reporting criteria are fulfilled if either:

- the time indicated in the stored IE "Periodical reporting" has elapsed for a given measurement that was either initiated or since the last measurement report related to this measurement was transmitted; or

- an event in stored IE "Measurement reporting criteria" was triggered. Events and triggering of reports for different measurement types are described in detail in clause 14.

The UE shall transmit the MEASUREMENT REPORT message using either AM or UM RLC according to the stored IE "measurement reporting mode" associated with the measurement identity number that triggered the report.

For the measurement, which triggered the MEASUREMENT REPORT message, the UE shall:

- Set the IE "measurement identity number " to the measurement identity number which is associated with that measurement in variable MEASUREMENT_IDENTITY.

- Set the IE "measured results" to include measurements according to the IE "reporting quantity" of that measurement stored in variable MEASUREMENT_IDENTITY.

- Set the IE "Measured results" in the IE "Additional measured results" according to the IE "reporting quantity" for all measurements associated with the measurement identities included in the IE "additional measurements" stored in variable MEASUREMENT_IDENTITY of the measurement that triggered the measurement report. If several additional measured results are to be included, the UE shall sort them in ascending order according to their IE "measurement identity number" in the MEASUREMENT REPORT message.

If the MEASUREMENT REPORT message was triggered by an event (i.e. not a periodical report), the UE shall:

- Set the measurement event results according to the event that triggered the report.

~~8.4.2.3 Reception of a MEASUREMENT REPORT message by the UTRAN~~

~~When the UTRAN receives the MEASUREMENT REPORT message, the measurement reporting procedure ends.~~

8.6.6.14 DPCH Compressed mode info

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" are included, the UE shall:

- ~~delete all previously stored compressed mode pattern sequences;~~
- ~~store~~ update each pattern sequence to the variable TGPS_IDENTITY according to the IE "TGPSI";
- ~~store~~ update into the variable TGPS_IDENTITY the configuration information defined by IE group" transmission gap pattern sequence configuration parameters ";
- activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" at the time indicated by IE "TGCFN" and begin the inter-frequency and/or inter-system measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
- monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified in 8.2.11.2;

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is not included, the UE shall:

- activate at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" and begin the inter-frequency and/or inter-system measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
- deactivate at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "deactivate" and terminate the inter-frequency and/or inter-system measurements corresponding to the pattern sequence measurement purpose of each deactivated pattern sequence;

8.6.7 Measurement information elements

8.6.7.1 Measurement validity

If the optional IE "measurement validity" for a given measurement has not been included in measurement control information ~~been assigned to value "release"~~, the UE shall delete the measurement associated with the variable MEASUREMENT IDENTITY after the UE makes a transition to a new state.

If the IE "measurement validity" for this measurement has been been included in measurement control information ~~assigned to value "resume"~~, the UE shall save the measurement associated with the variable MEASUREMENT IDENTITY~~.~~ The IE "UE state" defines the scope of resuming the measurement.

If the "UE state" is defined as "all states", the UE shall continue the measurement after making a transition to a new state. This scope is assigned only for traffic volume type measurements and can only be applied by the UE if the IE "measurement object" has not been included in measurement control information.~~ If the IE "measurement object" has been included in measurement control information, the UE shall not save the measurement control information in variable MEASUREMENT IDENTITY, but shall send a MEASUREMENT CONTROL FAILURE message to the UTRAN with failure cause "incomplete configuration".~~

If the "UE state" is defined as "all states except CELL_DCH", the UE shall store the measurement to be resumed after a subsequent transition from CELL_DCH state to any of the other states in connected mode. This scope is assigned only for traffic volume type measurements.

If the "UE state" is defined as "CELL_DCH", the UE shall store the measurement to be resumed after a subsequent transition to CELL_DCH state. After cell re-selection, the UE shall delete any ongoing ~~measurement~~ intra-frequency or inter-frequency and inter-system type measurement associated with the variable MEASUREMENT IDENTITY. Other measurement types shall, however, be continued regardless of cell reselection.

8.6.7.2 Filter coefficient

If the IE "Filter coefficient" is received the UE shall apply filtering of the measurements for that measurement quantity according to the formula below. This filtering shall be performed by the UE before UE event evaluation. The UE shall also filter the measurements reported in the IE "Measured results" or the IE "Measurement results on RACH". The filtering shall not be performed for cell-reselection in connected or idle mode.

The filtering shall be performed according to the following formula.

$$F_n = (1-a) \cdot F_{n-1} + a \cdot M_n$$

The variables in the formula are defined as follows:

$\boldsymbol{F_n}$ is the updated filtered measurement result

$\boldsymbol{F_{n-1}}$ is the old filtered measurement result

$\boldsymbol{M_n}$ is the latest received measurement result from physical layer measurements, the unit used for $\boldsymbol{M_n}$ is the same unit as the reported unit in the MEASUREMENT REPORT message or the unit used in the event evaluation.

$\boldsymbol{a} = 1/2^{(k/2)}$, where k is the parameter received in the IE "Filter coefficient".

NOTE: if $\boldsymbol{a}$ is set to 1 that will mean no layer 3 filtering.

In order to initialise the averaging filter, $\boldsymbol{F_0}$ is set to $\boldsymbol{M_1}$ when the first measurement result from the physical layer measurement is received.

The physical layer measurement results are sampled once every measurement period. The measurement period and the accuracy for a certain measurement is defined in 3G TS 25.133.

8.6.7.3 Intra-frequency/Inter-frequency/Inter-system cell info list

If one of these IEs is received, and "Removed ***** cells" or/and "New ****** cells" is present in the received IE, UE shall update measurement objects for that measurement accordingly.

If one of these IEs is included, but neither "Removed ***** cells" nor "New ****** cells" is included, UE shall not change the information on that measurement object. (This case is applied only when Measurement Command = "Modify".)

If one of these IEs is not received when IE is absent, UE shall re-order same measurement type by measurement ID in ascending order, and use the preceding ID's measurement object information. (For example, suppose UE is assigned 3 measurement IDs (suppose they were ID10, 11, and 15) for intra-frequency measurement, and UE did not receive "Intra-frequency cell info" for Measurement ID 15. When performing the measurement assigned with 15, UE shall use the measurement object information associated with Measurement ID 11).

8.6.7.x Intra-frequency measurement quantity

If the IE "Intra-frequency measurement quantity" is received,

- the UE shall check the parameter "Measurement quantity".
  - If the measurement quantity is set to "pathloss", the UE shall check whether the parameter "Primary CPICH Tx power" has been included for every intra-frequency cell in the IE "cell info" stored in variable MEASUREMENT_IDENTITY.
    - If the parameter " Primary CPICH Tx power" is missing from any cell in the intra-frequency cell info list, the UE shall send to the UTRAN a MEASUREMENT CONTROL FAILURE message with the "Failure cause " parameter set to "Configuration incomplete".

8.6.7.4 Inter-system measurement quantity

If the IE "Inter-system measurement quantity" is received and CHOICE system is GSM,

- the UE shall check the parameter "BSIC verification required".
  - If BSIC verification required is set to "required", the UE shall only report measurement quantities for GSM cells with a "verified" BSIC.
  - If BSIC verification required is set to "not required", the UE shall report measurement quantities for GSM cells both with "verified" and "non-verified" BSIC.

    NOTE: The requirements for a cell to be considered "verified" or "non-verified" can be found in TS 25.133.
- the UE shall check the parameter "Measurement quantity".
  - If the measurement quantity is set to "pathloss", the UE shall check whether the parameter "Output power" has been included for every inter-system cell in the IE "inter-system cell info list" stored in variable MEASUREMENT_IDENTITY.
    - If the parameter "output power" is missing from any cell in the inter-system cell info list, the UE shall send to the UTRAN a MEASUREMENT CONTROL FAILURE message with the "Failure cause " parameter set to "Configuration incomplete".

8.6.7.x Inter-system reporting quantity

If the IE "Inter-system reporting quantity" is received by the UE, the UE shall store the content of the IE to the variable MEASUREMENT_IDENTITY.

The UE shall include measured results in MEASUREMENT REPORT as specified in the IE " Inter-system reporting quantity" with the following restrictions:

- If the UE has not confirmed the BSIC of the measured cell, then
  - If no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.
- If the UE has confirmed the BSIC of the measured cell, then
  - If no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor " BSIC re-confirmation" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.

8.6.7.5 Cell Reporting Quantities

If the IE "Cell Reporting Quantities" is received by the UE, the UE shall store the content of the IE "Cell Reporting Quantities" to the variable MEASUREMENT_IDENTITY.

The UE shall include measured results in MEASUREMENT REPORT as specified in the IE "Cell Reporting Quantity", except for the following case:

If the IE "Cell Identity" is set to TRUE, the UE shall:

- in CELL_FACH state:
  - report the IE "Cell Identity" that is given in System Information Block type 4 (or type 3, if System Information Block type4 is not being broadcast).
- in CELL_DCH state:
  - treat the IE as if the IE "Cell Identity" is set to FALSE.

8.6.7.x Periodical Reporting Criteria

If the IE "Periodical Reporting Criteria" is received by the UE, the UE shall store the content of the IE "Amount of Reporting" and IE "Reporting interval" to the variable MEASUREMENT_IDENTITY.

The UE shall send the first MEASUREMENT REPORT message as soon as the first measurement has been completed according to the requirements set in [25.133]. After this, the UE shall send the next MEASUREMENT REPORT messages with intervals specified by the "Reporting interval" IE.

After the UE has sent a total number of MEASUREMENT REPORT messages, which equals the value set by IE "Amount of reporting", the UE shall terminate measurement reporting and delete all measurement information linked with the "Measurement identity" of the ongoing measurement from the variable MEASUREMENT_IDENTITY.

8.6.7.6 Reporting Cell Status

If the IE "Reporting Cell Status" is received, the UE shall set the IE "Measured Results" in MEASUREMENT REPORT as follows:

- for intra-frequency measurement and inter-frequency measurement:
  - include the IE "Cell Measured Results" for cells that satisfy the condition (such as "Report cells within active ~~set cells~~") specified in "Reporting Cell Status", in descending order by the measurement quantity.
- the maximum number of the IE "Cell Measured Results" to be included in the IE "Measured Results" is the number specified in "Reporting Cell Status".

If the IE "Reporting Cell Status" is not received for intra-frequency or inter-frequency measurement, the UE shall:

- exclude the IE "cell measured results" for any cell in MEASUREMENT REPORT.

8.6.7.x Traffic Volume Measurement

If the IE " Traffic Volume Measurement" is received by the UE, the UE shall store the content of the IE to the variable MEASUREMENT_IDENTITY.

If the IE " Traffic volume measurement Object " is not included, the UE shall apply the measurement reporting criteria to all uplink transport channels.

8.6.7.x Traffic Volume Reporting Criteria

If the IE " Traffic Volume Reporting Criteria " is received by the UE, the UE shall store the content of the IE " Traffic Volume Reporting Criteria " to the variable MEASUREMENT_IDENTITY.

If the IE "UL transport channel id" is not included, the UE shall apply the measurement reporting criteria to all uplink transport channels indicated in the " Traffic volume measurement Object". If the UTRAN has not specified a traffic volume measurement object for a given measurement identity, the UE shall apply the measurement reporting criteria to all uplink transport channels, which it is using.

10.2.17 MEASUREMENT REPORT

This message is used by UE to transfer measurement results to the UTRAN.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.14	
Measurement Information Elements				
Measurement identity number	MP		Measurement identity number 10.3.7.73	
Measured Results	OP		Measured Results 10.3.7.69	
Measured Results on RACH	OP		Measured Results on RACH 10.3.7.70	
Additional Measured results	OP	1 to <maxAdditionalMeas>		
>Measured Results	MP		Measured Results 10.3.7.69	
Event results	OP		Event results 10.3.7.7	

10.3.2.4 Cell selection and re-selection info for SIB11/12

Information Element/Group name	Need	Multi	Type and reference	Semantics description
$Qoffset1_{s,n}$	MD		Real(-50.0..50.0 by step of 1)	Default value is 0.
$Qoffset2_{s,n}$	*CV-FDD-Quality-Measure*		Real(-50.0..50.0 by step of 1)	Default value is 0.
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.38	[dBm] UE_TXPWR_MAX_RACH in 25.304. Default is the Maximum allowed UL TX power for the serving cell
HCS neighbouring cell information	OP		HCS Neighbouring cell information 10.3.7.11	
CHOICE *mode*	MP			
>FDD				
>>Qqualmin	MD		Integer (-20..0)	Ec/N0, [dB] Default value is Qqualmin for the serving cell
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	RSCP, [dBm] Default value is Qrxlevmin for the serving cell
>TDD				
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	RSCP, [dBm] Default value is Qrxlevmin for the serving cell
>GSM				
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	RSCP, [dBm] Default value is Qrxlevmin for the serving cell

Condition	Explanation
FDD-Quality-Measure	Presence is not allowed if the IE "Cell_selection_and_reselection_quality_measure" has the value CPICH RSCP, otherwise the IE is mandatory and has a default value.

10.3.6.32 DPCH compressed mode info

NOTE: Only for FDD.

This information element indicates the parameters of the downlink compressed mode to be used by the UE in order to perform inter-frequency measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence		1 to <maxTGPS>		
> TGPSI	MP		TGPSI 10.3.6.80	
>TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be activated or deactivated.
> TGCFN	MP		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.
>Transmission gap pattern sequence configuration parameters	OP			
>> TGMP	MP		Enumerated(TDD measurement, FDD measurement, GSM measurement, Other)	Transmission Gap pattern sequence Measurement Purpose.
>> TGPRC	MP		Integer (1..63, Infinity)	The number of transmission gap patterns within the Transmission Gap Pattern Sequence.
~~>> TGCFN~~	~~MP~~		~~Integer (0..255)~~	~~Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.~~
>> TGSN	MP		Integer (0..14)	Transmission Gap Starting Slot Number The slot number of the first transmission gap slot within the TGCFN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>TGL1	MP		Integer(1..14)	The length of the first Transmission Gap within the transmission gap pattern expressed in number of slots
>> TGL2	MD		Integer (1..14)	The length of the second Transmission Gap within the transmission gap pattern. If omitted, then TGL2=TGL1.
>>TGD	MP		Integer(15..269, undefined)	Transmission gap distance indicates the number of slots between starting slots of two consecutive transmission gaps within a transmission gap pattern. If there is only one transmission gap in the transmission gap pattern, this parameter shall be set to zero.
>> TGPL1	MP		Integer (1..144)	The duration of transmission gap pattern 1.
>> TGPL2	MD		Integer (1..144)	The duration of transmission gap pattern 2. If omitted, then TGPL2=TGPL1.
>>RPP	MP		Enumerated (mode 0, mode 1).	Recovery Period Power control mode during the frame after the transmission gap within the compressed frame. Indicates whether normal PC mode or compressed PC mode is applied
>>ITP	MP		Enumerated (mode 0, mode 1).	Initial Transmit Power is the uplink power control method to be used to compute the initial transmit power after the compressed mode gap.
>>UL/DL mode	MP		Enumerated (UL only, DL only, UL/DL)	Defines whether only DL, only UL, or combined UL/DL compressed mode is used.
>> Downlink compressed mode method	CV DL		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap
>> Uplink compressed mode method	CV UL		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>Downlink frame type	MP		Enumerated (A, B)	
>>DeltaSIR1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the compressed frames corresponding to the first transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase)
>>DeltaSIRafter1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the compressed frames corresponding to the first transmission gap in the transmission gap pattern.
>>DeltaSIR2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the compressed frames

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				corresponding to the second transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) When omitted, DeltaSIR2 = DeltaSIR1.
>>DeltaSIRafter2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the compressed frames corresponding to the second transmission gap in the transmission gap pattern. When omitted, DeltaSIRafter2 = DeltaSIRafter1.

Condition	Explanation
UL	This information element is only sent when the value of the "UL/DL mode" IE is "UL only" or "UL/DL".
DL	This information element is only sent when the value of the "UL/DL mode" IE is "DL only" or "UL/DL".

10.3.6.33 DPCH Compressed Mode Status Info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence		1 to <maxTGPS>		
> TGPSI	MP		TGPSI 10.3.6.80	Transmission Gap Pattern Sequence Identifier
> TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be active or inactive.
> TGCFN	MP		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.

10.3.7.3 Cell measured results

Includes non frequency related measured results for a cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell Identity	OP		Cell Identity 10.3.2.2	
SFN-SFN observed time difference	OP		SFN-SFN observed time difference 10.3.7.88	
CFN-SFN observed time difference	OP		CFN-SFN observed time difference 10.3.7.6	Note 2
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.59	
>>CPICH Ec/N0	OP		Integer(-20..0)	In dB
>>CPICH RSCP	OP		Integer(-115..-40)	In dBm
>>Pathloss	OP		Integer(46..158)	In dB
>TDD				
>>Cell parameters Id	MP		Cell parameters Id 10.3.6.8	
>>Primary CCPCH RSCP	OP		Primary CCPCH RSCP info 10.3.7.79	
>>Pathloss	OP		Integer(46..158)	In dB
>> Timeslot list	OP	1 to < maxTS>		
>>>Timeslot ISCP	MP		Timeslot ISCP Info 10.3.7.90	The UE shall report the Timeslot ISCP in the same order as indicated in the cell info

~~NOTE 1: Feasibility of performing these measurements with compressed mode is unclear.~~

10.3.3.12 Failure cause and error information

Cause for failure to perform the requested procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	MP		Enumerated (Configuration unsupported, configuration incomplete, physical channel failure, incompatible simultaneous reconfiguration, protocol error) , compressed mode runtime error, unsupported measurement,)	At least 13 spare values, Criticality: reject, are needed
Protocol error information	CV-*ProtErr*		Protocol error information 10.3.8.10	
Deleted TGPSI	*CV-CompModeErr*		TGPSI 10.3.6.80	

Condition	Explanation
ProtErr	Presence is mandatory if the IE "Failure cause" has the value "Protocol error"; otherwise the element is not needed in the message.

10.3.7.13 Inter-frequency cell info list

Contains the measurement object information for an inter-frequency measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Inter-frequency cell removal	MP			
> Remove all inter-frequency cells				No data
> Remove some inter-frequency cells				
>> Removed inter-frequency cells	~~O~~MP	1 .. <maxCellMeas>		
>>> Inter-frequency cell id	MP		Integer(0 .. <MaxInterCells>)	
> No inter-frequency cells removed				No data
New inter-frequency cells	OP	1 to <maxCellMeas>		
>Inter-frequency cell id	MD		Integer(0 .. <MaxInterCells>)	The first inter-frequency cell in the list corresponds to inter-frequency cell id 0, the second corresponds to inter-frequency cell id 1 etc
>Frequency info	MD		Frequency info 10.3.6.35	Default value is the value of the previous "frequency info" in the list (note : the first occurrence is then MP)
>Cell info	MP		Cell info 10.3.7.2	

10.3.7.19 Inter-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an inter-frequency measurements. All events concerning inter-frequency measurements are labelled 2x where x is a,b,c..

Event 2a: Change of best frequency.

Event 2b: The estimated quality of the currently used frequency is below a certain threshold **and** the estimated quality of a non-used frequency is above a certain threshold.

Event 2c: The estimated quality of a non-used frequency is above a certain threshold.

Event 2d: The estimated quality of the currently used frequency is below a certain threshold.

Event 2e: The estimated quality of a non-used frequency is below a certain threshold.

Event 2f: The estimated quality of the currently used frequency is above a certain threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeasEvent>		
>Inter-frequency event identity	MP		Inter-frequency event identity 10.3.7.14	
>Threshold used frequency	CV – clause 0		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm
>W used frequency	CV – clause 0		Real(0, 0.1..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0, 0.5..14.5 by step of 0.5)	In event 2a, 2b, 2c, 2d, 2e, 2f
>Time to trigger	MP		Time to trigger 10.3.7.89	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
~~>Amount of reporting~~	~~MP~~		~~Integer(1, 2, 4, 8, 16, 32, 64, infinity)~~	
~~>Reporting interval~~	~~MP~~		~~Integer(0, 250, 500, 1000, 2000, 4000, 8000, 16000)~~	~~Indicates the interval of periodical reporting when such reporting is triggered by an event. A zero value indicates that event triggered periodical reporting shall not be applied. Interval in milliseconds~~
>Reporting cell status	OP		Reporting cell status 10.3.7.86	
>Parameters required for each non-used frequency	OP	1 to <maxFreq>		
>>Threshold non used frequency	CV – clause 1		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm
>>W non-used frequency	CV-clause 1		Real(0, 0.1..2.0 by	

			step of 0.1)	

Condition	Explanation
Clause 0	2a,2b, 2d, or 2f, otherwise the IE is not needed
Clause 1	The IE is mandatory in if "inter frequency event identity" is set to 2a, 2b, 2c or 2[e], otherwise the IE is not needed

10.3.7.20 Inter-frequency measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~Inter-frequency measurement identity number~~	~~MD~~		~~Measurement identity number 10.3.7.73~~	~~The inter-frequency measurement identity number has default value 2.~~
Inter-frequency cell info list	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 measurement reporting criteria~~	~~OP~~		~~Inter-frequency measurement reporting criteria 10.3.7.19~~	

10.3.7.23 Inter-system cell info list

Contains the measurement object information for an inter-system measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Inter-system cell removal	MP			
> Remove all inter-system cells				No data
> Remove some inter-system cells				
>> Removed inter-system cells	~~O~~MP	1 to <maxCellMeas>		
>>> Inter-system cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
> Remove no inter-system cells				
New inter-system cells	OP	1 to <maxCellMeas>		
>Inter-system cell id	MD		Integer(0 .. <maxCellMeas> - 1)	The first inter-system cell in the list corresponds to inter-system cell id 0, the second corresponds to inter-system cell id 1 etc.
>CHOICE *Radio Access Technology*	MP			At least one spare choice, Criticality: Reject, is needed.
>>GSM				
~~>>>$Qoffset_{s,n}$~~	~~MD~~		~~Integer (-50..50)~~	~~Default value if the value of the previous $Qoffset_{s,n}$ in the list (NOTE: the first occurrence is then MP)~~
~~>>>HCS Neighbouring cell information~~	~~OP~~		~~HCS Neighbouring cell information 10.3.7.11~~	
~~>>>Qrxlevmin~~	~~MP~~			
~~>>>Maximum allowed UL TX power~~	~~MP~~		~~Maximum allowed UL TX power 10.3.6.38~~	
>>> Cell selection and re-selection info	CV-BCHopt		Cell selection and re-selection info for SIB11/12 10.3.2.4	Only when sent in system information. If HCS is not used and all the parameters in cell selection and re-selection info are default values, this IE is absent.
>>> BSIC	MP		BSIC 10.3.8.2	
>>>BCCH ARFCN	MP		Integer (0..1023)	GSM TS 04.18
>>>Output power	OP			
>>IS-2000				
>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Section 3. 7.3.3.2.27, *Candidate Frequency Neighbor List Message*

10.3.7.29 Inter-system measurement quantity

The quantity the UE shall measure in case of inter-system measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement quantity for UTRAN quality estimate	~~MP~~OP		Intra-frequency measurement quantity 10.3.7.38	
CHOICE *system*	MP			
>GSM				
>>Measurement quantity	MP		Enumerated(GSM Carrier RSSI, Pathloss)	
>>Filter coefficient	MP		Filter coefficient 10.3.7.9	
>>BSIC verification required	MP		Enumerated(required, not required)	Note 1
>IS2000				
>>TADD E_c/I_0	MP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.6 of TIA/EIA/IS-2000.5
>>TCOMP E_c/I_0	MP		Integer(0..15)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>SOFT SLOPE	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.3 and 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>ADD_INTERCEPT	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5

~~NOTE 1: The possibility to use this IE is dependant on comments from SMG2.~~

Also, this IE must be set to "required" if IE "Observed time difference to GSM cell" in IE "Inter-system reporting quantity "is set to "true".

10.3.7.30 Inter-system measurement reporting criteria

The triggering of the event-triggered reporting for an inter-system measurement. All events concerning inter-system measurements are labelled 3x where x is a,b,c..

Event 3a: The estimated quality of the currently used UTRAN frequency is below a certain threshold **and** the estimated quality of the other system is above a certain threshold.

Event 3b: The estimated quality of other system is below a certain threshold.

Event 3c: The estimated quality of other system is above a certain threshold.

Event 3d: Change of best cell in other system.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Inter-system event identity	MP		Inter-system event identity 10.3.7.24	
>Threshold own system	CV – clause 0			
>W	CV – clause 0			In event 3a
>Threshold other system	CV – clause 1			In event 3a, 3b, 3c
>Hysteresis	MP			
>Time to trigger	MP		Time to trigger 10.3.7.89	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report.
~~>Amount of reporting~~	~~MP~~			
~~>Reporting interval~~	~~MP~~			~~Indicates the interval of periodical reporting when such reporting is triggered by an event. A zero value indicates that event triggered periodical reporting shall not be applied.~~
>Reporting cell status	OP		Reporting cell status 10.3.7.86	

Condition	Explanation
Clause 0	The IE is mandatory if " Inter-system event identity" is set to "3a", otherwise the IE is not needed
Clause 1	The IE is mandatory if " Inter-system event identity" is set to 3a, 3b or 3c, otherwise the IE is not needed

10.3.7.31 Inter-system measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~Inter-system measurement identity number~~	~~MD~~		~~Measurement identity number 10.3.7.73~~	~~The inter-system measurement identity number has default value 3.~~
Inter-system cell info list	OP		Inter-system cell info list 10.3.7.23	
~~Inter-system measurement Quantity~~	~~OP~~		~~Inter-system measurement quantity 10.3.7.29~~	

10.3.7.33 Intra-frequency cell info list

Contains the measurement object information for an intra-frequency measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Intra-frequency cell removal	MP			
> Remove all intra-frequency cells				No data
> Remove some intra-frequency cells				
>> Removed intra-frequency cells	~~O~~MP	1 to <maxCell Meas>		
>>> Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
> Remove no intra-frequency cells				
New intra-frequency cell	OP	1 to <maxCell Meas>		This information element must be present when "Intra-frequency cell info list" is included in the system information
>Intra-frequency cell id	MD		Integer(0 .. <maxCellMeas> - 1)	The first intra-frequency cell in the list corresponds to intra-frequency cell id 0, the second corresponds to intra-frequency cell id 1 etc.
>Cell info	MP		Cell info 10.3.7.2	

10.3.7.36 Intra-frequency measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency cell info list	OP		Intra-frequency cell info list 10.3.7.33	Measurement object ~~Not included for measurement of detected set.~~
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	CV-*reporting*		Reporting cell status 10.3.7.86	
Measurement validity	OP		Measurement validity 10.3.7.76	
CHOICE report criteria	~~M~~OP			
>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.78	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

Condition	Explanation
Reporting	This IE is optional if the CHOICE "report criteria" is equal to "periodical reporting criteria" or "No reporting", otherwise the IE is not needed

10.3.7.39 Intra-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an intra-frequency measurement. All events concerning intra-frequency measurements are labelled 1x where x is a, b, c….

Event 1a: A Primary CPICH enters the Reporting Range (FDD only).

Event 1b: A Primary CPICH leaves the Reporting Range (FDD only).

Event 1c: A Non-active Primary CPICH becomes better than an active Primary CPICH (FDD only).

Event 1d: Change of best cell [Note 1] (FDD only).

Event 1e: A Primary CPICH becomes better than an absolute threshold (FDD only).

Event 1f: A Primary CPICH becomes worse than an absolute threshold (FDD only).

Event 1g: Change of best cell in TDD

Event 1h: Timeslot ISCP below a certain threshold (TDD only).

Event 1i: Timeslot ISCP above a certain threshold (TDD only).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeasEvent>		
> Intra-frequency event identity	MP		Intra-frequency event identity 10.3.7.34	
>Triggering condition 1	CV – clause 0		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells)	Indicates which cells can trigger the event
>Triggering condition 2	CV – clause 6		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells, Detected set cells, Detected set cells and monitored set cells)	Indicates which cells can trigger the event
>Reporting Range	CV – clause 2		Real(0..14.5 by step of 0.5)	In dB. In event 1a,1b.
>Cells forbidden to affect Reporting range	CV – clause 1	1 to <maxCellMeas>		In event 1a,1b

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>CHOICE *mode*	MP			
>>>FDD				
>>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.59	
>>>TDD				
>>>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.56	
>W	CV – clause 2		Real(0.0..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0..7.5 by step of 0.5)	In dB.
> Threshold used frequency	CV-clause 3		Integer (-115..165)	Range used depend on measurement quantity. CPICH RSCP -115 .. -40 dBm CPICH Ec/No -24..0 dB Pathloss 30..165dB ISCP -115..-25 dBm
>Reporting deactivation threshold	CV – clause 4		Integer(0, 1, 2, 3, 4, 5, 6, 7)	In event 1a Indicates the maximum number of cells allowed in the active set in order for event 1a to occur. 0 means not applicable .
>Replacement activation threshold	CV - clause 5		Integer(0, 1, 2, 3, 4, 5, 6, 7)	In event 1c Indicates the minimum number of cells allowed in the active set in order for event 1c to occur. 0 means not applicable
>Time to trigger	MP		Time to trigger 10.3.7.89	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>Amount of reporting	~~MP~~CV – clause 7		Integer(1, 2, 4, 8, 16, 32, 64, Infinity)	~~Measurement is "released" after the indicated amount of reporting from the UE itself.~~
>Reporting interval	CV – clause 7~~MP~~		Integer(0, 250, 500, 1000, 2000, 4000, 8000, 16000)	Indicates the interval of periodical reporting when such reporting is triggered by an event. Interval in milliseconds. 0 means no periodical reporting
>Reporting cell status	OP		Reporting cell status 10.3.7.86	

Condition	Explanation
Clause 0	The IE is mandatory if "Intra-frequency event identity" is set to ~~"1a",~~"1b"~~,~~ ~~"1~~[e]~~"~~ ~~or~~ "1f", otherwise the IE is not needed
Clause 1	The IE is optional if "Intra-frequency event identity" is set to "1a" or "1b", otherwise the IE is not needed
Clause 2	The IE is mandatory if "Intra-frequency event identity" is set to "1a" or "1b", otherwise the IE is not needed
Clause 3	The IE is mandatory if "Intra-frequency event identity" is set to , "1e", "1f", "1h", "1i" or "1j", otherwise the IE is not needed
Clause 4	The IE is mandatory if "Intra-frequency event identity" is set to "1a", otherwise the IE is not needed
Clause 5	The IE is mandatory if "Intra-frequency event identity" is set to "1c", otherwise the IE is not needed
Clause 6	The IE is mandatory if "Intra-frequency event identity" is set to "1ae" or "1ef".
Clause 7	The IE is mandatory if "Intra-frequency event identity" is set to "1a" or "1c".

~~NOTE 1: When best PCCPCH in active set changes, all active cells are reported.~~

10.3.7.72 Measurement control system information

Information element/Group name	Need	Multi	Type and reference	Semantics description
Use of HCS	MP		Enumerated (Not used, used)	Indicates if the serving cell belongs to a HCS structure
Cell_selection_and_reselection_quality_measure	MP		Enumerated (CPICH Ec/N0, CPICH RSCP)	Choice of measurement (CPICH Ec/N0 or CPICH RSCP) to use as quality measure Q.
Intra-frequency measurement system information	OP		Intra-frequency measurement system information 10.3.7.40	
Inter-frequency measurement system information	OP		Inter-frequency measurement system information 10.3.7.20	
Inter-system measurement system information	OP		Inter-system measurement system information 10.3.7.31	
Traffic volume measurement system information	OP		Traffic volume measurement system information 10.3.7.98	
UE Internal measurement system information	OP		UE Internal measurement system information 10.3.7.106	

NOTE1: The reporting of intra-frequency measurements is activated when state CELL_DCH is entered.

10.3.7.76 Measurement validity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~Resume/release~~	~~MP~~		~~Enumerated('resume', 'release')~~	~~Indicates whether a given measurement identifier should be released after transitions to CELL_DCH and/or transitions from CELL_DCH state.~~
UE state	~~CV – Resume~~MP		Enumerated(CELL_DCH, all states except CELL_DCH, all states)	Indicates the states, in which measurement reporting shall be conducted. The values 'all states except CELL_DCH' and 'all states' are used for measurement type 'traffic volume reporting'.

~~Condition~~	~~Explanation~~
~~*Resume*~~	~~This IE is mandatory if "Resume/Release" = Resume, otherwise the IE is not needed~~

10.3.7.78 Periodical reporting criteria

Contains the periodical reporting criteria information. It is necessary only in the periodical reporting mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Amount of reporting	MD		Integer(1, 2, 4, 8, 16, 32, 64, Infinity)	~~Measurement is "released" after the indicated amount of reporting from the UE itself.~~ The default value is infinity.
Reporting interval	MP		Integer(250, 500, 1000, 2000, 3000, 4000, 6000, 8000, 12000, 16000, 20000, 24000, 28000, 32000, 64000)	Indicates the interval of periodical report. Interval in milliseconds

10.3.7.80 Quality measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
BLER measurement results	OP	1 to <maxTrCH>		
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	
>DL Transport Channel BLER	OP		Real(0.00 ..1.00, by step of 0.02)	In dB= -Log10(Transport channel BLER)
CHOICE mode				
>FDD				No data
~~>>SIR~~	~~OP~~		~~Integer(-10..20)~~	~~In dB~~
>TDD				
>>SIR measurement results	OP	1 to <MaxCCTrCH>		SIR measurements for DL CCTrCH
>>>TFCS ID	MP		Enumerated (1...8)	
>>>Timeslot list	MP	1 to <maxTS>		for all timeslot on which the CCTrCH is mapped on
>>>>SIR	MP		Integer(-10...20)	the UE shall report in ascending timeslot order

10.3.7.82 Quality measurement event results ~~(FFS)~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channels causing the event	OP	1 to <maxTrCH>		
>Transport channel identity	MP		Transport channel identity 10.3.5.18	

10.3.7.83 Quality measurement reporting criteria

Event 5a: Number of bad CRCs on a certain transport channel exceeds a threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH>		
>Tranpsport channel identity	MP		Transport channel identity 10.3.5.18	
>Total CRC	MP		Integer(1..512)	Number of CRCs
>Bad CRC	MP		Integer(1..512)	Number of CRCs
>Pending after trigger	MP		Integer(1..512)	Number of CRCs

10.3.7.84 Quality reporting quantity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Transport Channel BLER	MP		Boolean	TRUE means report requested
Transport channels for BLER reporting	CV BLER reporting	1 to <maxTrCH>		The default, if no transport channel identities are present, is that the BLER is reported for all downlink transport channels
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	
CHOICE mode				
>FDD				No data
~~>>SIR~~	~~MP~~		~~Boolean~~	~~TRUE means report requested~~
>TDD				
>>SIR measurement list	OP	1 to <maxCCTrCH>		SIR measurements shall be reported for all listed TFCS IDs
>>>TFCS ID	MP		Enumerated (1...8)	

Condition	Explanation
BLER reporting	This information element is absent if 'DL Transport Channel BLER' is 'False' and optional, if 'DL Transport Channel BLER' is 'True'

10.3.7.86 Reporting Cell Status

Indicates maximum allowed number of cells to report and whether active set cells and/or virtual active set cells and/or monitored set cells and/or detected set cells on used frequency and/or monitored set cells on non used frequency should/should not be included in the IE "Measured results".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice ~~reporting~~reported cell	MP			
> Report cells w~~W~~ithin active set ~~cells~~				
>> Maximum number of reported~~ing~~ cells ~~type1~~	MP		Integer(1..6)	
> Report cells w~~W~~ithin monitored set cells on used frequency				
>> Maximum number of reported~~ing~~ cells ~~type1~~	MP		Integer(1..6)	
> Report cells ~~W~~within active set and/or monitored set cells on used frequency				
>> Maximum number of reported~~ing~~ cells ~~type1~~	MP		Integer(1..6)	
> Report cells within detected set on used frequency				
>> Maximum number of reported cells	MP		Integer(1..6)	
> Report cells within monitored set and/or detected set on used frequency				
>> Maximum number of reported cells	MP		Integer(1..6)	
>~~Include~~ Report all active set cells + cells within monitored set ~~cells~~ on used frequency				
>> Maximum number of ~~reporting~~reported cells ~~type3~~	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, …., virtual/active set cells+6)	
>Report all active set cells + cells within detected set on used frequency				
>> Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, …., virtual/active set cells+6)	
>Report all active set cells + cells within monitored set and/or detected set on used frequency				
>> Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, …., virtual/active set cells+6)	
>~~Within~~ Report cells within virtual active set ~~cells~~				
>> Maximum number of ~~reporting~~reported cells ~~type1~~	MP		Integer(1..6)	

>Report cells wWithin monitored set cells on non-used frequency				
>> Maximum number of reportingreported cells type1	MP		Integer(1..6)	
>Report cells wWithin monitored cells and/or active set on non-used frequency				
>> Maximum number of reportingreported cells type1	MP		Integer(1..6)	
>Include Report all virtual active set cells + cells within monitored set cells on non-used frequency				
>> Maximum number of reportingreported cells type3	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, …., virtual/active set cells+6)	
> Report cells Wwithin active set cells or within virtual active set cells				
>> Maximum number of reportingreported cells type2	MP		Integer (1..12)	
> Report cells Wwithin active and/or monitored cells set on used frequency or within active and/or monitored cells set on non-used frequency				
>> Maximum number of reportingreported cells type2	MP		Integer(1..12)	

NOTE: Monitored cells consist of active set cells and monitored set cells

10.3.7.97 Traffic volume measurement reporting criteria

Contains the measurement reporting criteria information for a traffic volume measurement.

Event 4a: RLC buffer payload exceeds an absolute threshold.

Event 4b: RLC buffer payload becomes smaller than an absolute threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH>		
>UL Transport Channel ID	OP		Transport channel identity 10.3.5.18	~~If the transport channel identity is not included, the measurement reporting criteria are applied to all transport channels.~~
>Parameters required for each Event	OP	1 to <maxMeasperEvent>		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.91	
>>Reporting Threshold	MP		Enumerated(8,16,32,64,128,256,512,1024,2K,3K,4K,6K,8K,12K,16K,24K,32K,48K,64K,96K,128K,192K,256K,384K,512K,768K)	Threshold in bytes And N Kbytes = N*1024 bytes
>>Time to trigger	OP		Time to trigger 10.3.7.89	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>>Pending time after trigger	OP		Integer(250, 500, 1000, 2000, 4000, 8000, 16000)	Time in seconds. Indicates the period of time during which it is forbidden to send any new measurement reports with the same Traffic volume event identitymeasurement ID even if the triggering condition is fulfilled again. Time in milliseconds
>>Tx interruption after trigger	OP		Integer (250, 500, 1000, 2000, 4000, 8000, 16000)	Time in milliseconds. Indicates whether or not the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.
~~Amount of reporting~~	~~OP~~		~~Integer(1, 2, 4, 8, 16, 32, 64, Infinity)~~	~~Measurement is "released" after the indicated amount of reporting from the UE itself.~~

13.4.7 MEASUREMENT_IDENTITY

This variable stores the measurements configured in the UE. For each configured measurement, the information below shall be stored.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MEASUREMENT CONTROL	MP		MEASUREMENT CONTROL 10.2.15, System Information Block type 11 10.2.49.8.12, System Information Block type 12 10.2.49.8.13	Information as contained in theseis messages.

14.1.2 Intra-frequency reporting events for FDD

Within the measurement reporting criteria field in the Measurement Control message the UTRAN notifies the UE which events should trigger a measurement report. ~~Examples of intra-frequency reporting events that would be useful for intra-frequency handover evaluation are given below. Note that normally the UEs do not need to report all these events.~~ The listed events are the toolbox from which the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.

All the illustrated events are measured with respect to any of the measurement quantities given in subclause 14.1.1. The measurement objects are the monitored primary common pilot channels (CPICH). The reporting events are marked with vertical arrows in the figures below.

NOTE: The events below are numbered 1A, 1B, 1C,… since all intra-frequency reporting events would be labelled 1X, inter-frequency reporting events would be labelled 2X, and so on for the other measurement types.

14.1.2.1 Reporting event 1A: A Primary CPICH enters the reporting range

When event 1A is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when a primary CPICH enters the reporting range as defined by the following formula:

For pathloss:

~~$10 \cdot LogM_{New} \geq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R + H_{1a}),$~~

$10 \cdot LogM_{New} \leq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R + H_{1a}),$

For all the other measurement quantitiesy:

$10 \cdot LogM_{New} \geq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R + H_{1a}),$

The variables in the formula are defined as follows:

- $\boldsymbol{M_{New}}$ is the measurement result of the cell entering the reporting range.
- $\boldsymbol{M_i}$ is a measurement result of a cell in the active set.
- $\boldsymbol{N_A}$ is the number of cells in the current active set.
- $\boldsymbol{M_{Best}}$ is the measurement result of the strongest cell in the active set.
- $\boldsymbol{W}$ is a parameter sent from UTRAN to UE.
- $\boldsymbol{R}$ is the reporting range
- $\boldsymbol{H_{1a}}$ is the hysteresis parameter for the event 1a.

The addition window of cells in event 1A is configured with the **reporting range** parameter ($\boldsymbol{R}$) common to many reporting events and an optional **hysteresis** parameter ($\boldsymbol{H_{1a}}$), which can be used to distinguish the addition window from reporting windows related to other measurement events.

The occurrence of event 1A is conditional on a **report deactivation threshold** parameter. This parameter indicates the maximum number of cells allowed in the active set for measurement reports to be triggered by event 1A to be transmitted.

Event 1A may be enhanced with an addition timer, which is configured with the **time-to-trigger** parameter (see subclause 14.1.5.2). If a time-to-trigger value is used, a cell must continuously stay within the reporting range for the given time period, before the UE shall send a measurement report.

Event 1A may be used for triggering a measurement report, which includes ~~unlisted~~ cells, which the UE has detected without having received a neighbour cell list.

If more than one cell triggers event 1A within the UE internal event evaluation period (defined in [25.133]) and fulfills the reporting criteria after the addition timer has elapsed , the UE shall report all of the triggering cells in the event results. The triggering cells shall be sorted in descending order according to the measured quantity.

14.1.2.2 Reporting event 1B: A primary CPICH leaves the reporting range

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when a primary CPICH leaves the reporting range as defined by the following formula:

For pathloss:

~~$10 \cdot LogM_{New} \leq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R + H_{1a}),$~~

$10 \cdot LogM_{New} \geq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R + H_{1a}),$

For all the other measurement quantitiesy:

$10 \cdot LogM_{Old} \leq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R + H_{1b}),$

The variables in the formula are defined as follows:

$\boldsymbol{M_{Old}}$ is the measurement result of the cell leaving the reporting range.

$\boldsymbol{M_i}$ is a measurement result of a cell in the active set.

$\boldsymbol{N_A}$ is the number of cells in the current active set.

$\boldsymbol{M_{Best}}$ is the measurement result of the strongest cell in the active set.

$\boldsymbol{W}$ is a parameter sent from UTRAN to UE.

$\boldsymbol{R}$ is the reporting range

$\boldsymbol{H_{1b}}$ is the hysteresis parameter for the event 1b.

The drop window of cells in event 1B is configured with the **reporting range** parameter ($\boldsymbol{R}$) common to many reporting events and an optional **hysteresis** parameter ($\boldsymbol{H_{1b}}$), which can be used to distinguish the drop window from reporting windows related to other measurement events.

Event 1B may be enhanced with a drop timer, which is configured with the **time-to-trigger** parameter. If the timer is used, the weakening cell must continuously stay below the reporting range for the given time period before the UE may send a measurement report.

If more than one cell triggers event 1B within the UE internal event evaluation period (defined in [25.133]) and fulfills the reporting criteria after the drop timer has elapsed, the UE shall report all of the triggering cells in the event results. The triggering cells shall be sorted in descending order according to the measured quantity.

14.1.2.5 Reporting event 1E: A Primary CPICH becomes better than an absolute threshold

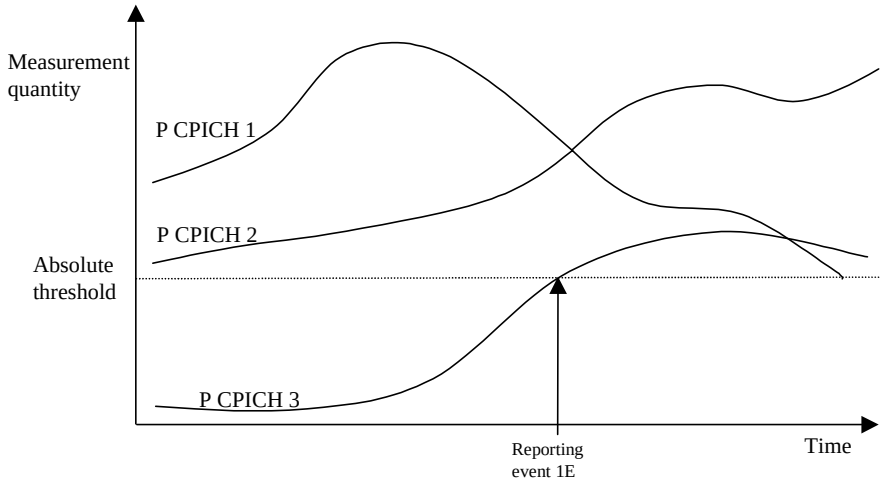

Figure 66: Event-triggered report when a Primary CPICH becomes better than an absolute threshold

When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the Measurement quantity of a Primary CPICH becomes better than an absolute threshold. The corresponding report contains (at least) the involved Primary CPICH.

Event 1E may be used for triggering a measurement report, which includes ~~unlisted~~ cells, which the UE has detected without having received a neighbour cell list.

14.1.4.1 Cell addition failure (FDD only)

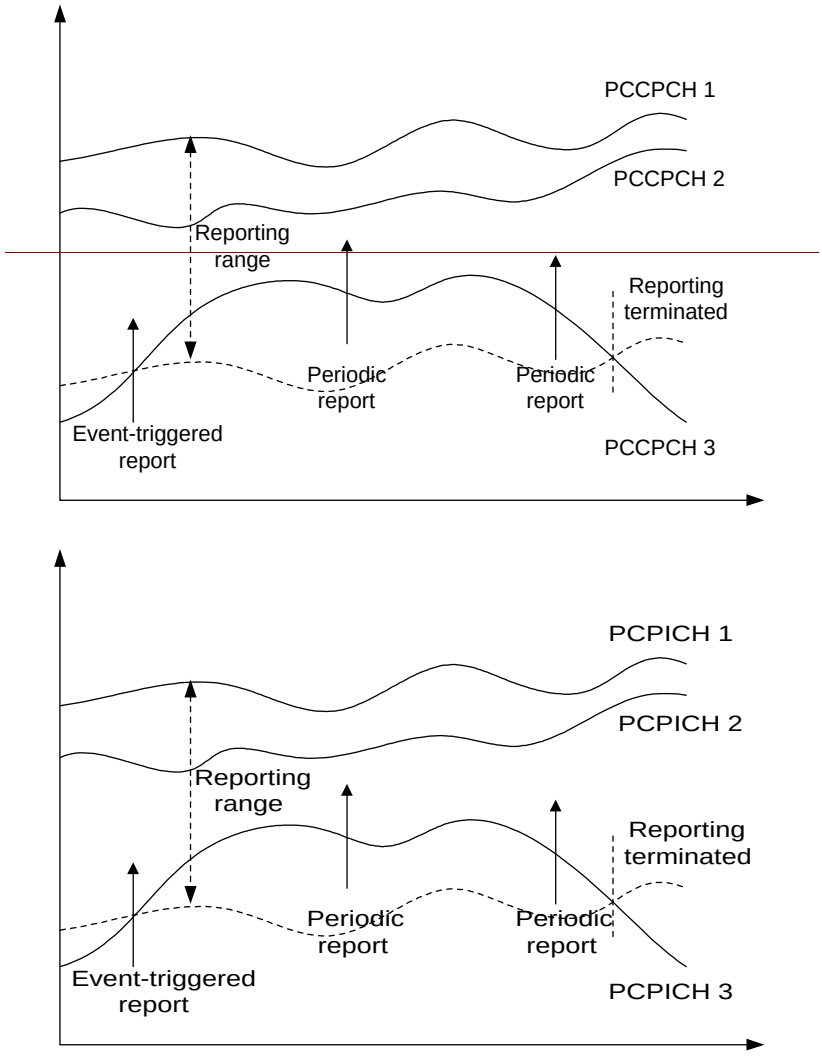

Figure 71: Periodic reporting triggered by event 1A

When a cell enters the reporting range and triggers event 1A, the UE shall transmit a MEASUREMENT REPORT to the UTRAN and typically this may result in an update of the active set. However, in some situations the UTRAN may be unable to add a strong cell to the active set typically due to capacity shortage for example.

The UE shall continue reporting after the initial report by reverting to periodical measurement reporting if the reported cell is not added to the active set. This is illustrated in Figure 71. During periodic reporting the UE shall transmit MEASUREMENT REPORT messages to the UTRAN at predefined intervals. The reports shall include reporting information of the cells in the current active set and of the monitored cell(s) in the reporting range.

Event-triggered periodic measurement reporting shall be terminated if: ~~either when~~

- there are no longer any monitored cell(s) within the reporting range, or; ~~or when~~
- the UTRAN has added cells to the active set so that it includes the maximum number of cells (defined by the **reporting deactivation threshold** parameter), which are allowed for event 1A to be triggered, or;
- the UE has sent the maximum number of MEASUREMENT REPORT messages (defined by the **amount of reporting** parameter).

The reporting period is assigned by the UTRAN (with the **Reporting interval** parameter). If the reporting ~~period~~ interval is set to zero, event-triggered measurement reporting shall not be applied.

~~NOTE: The figure should be updated to reflect that the measurements are made on the CPICH rather than PCCPCH.~~

14.1.4.2 Cell replacement failure (FDD only)

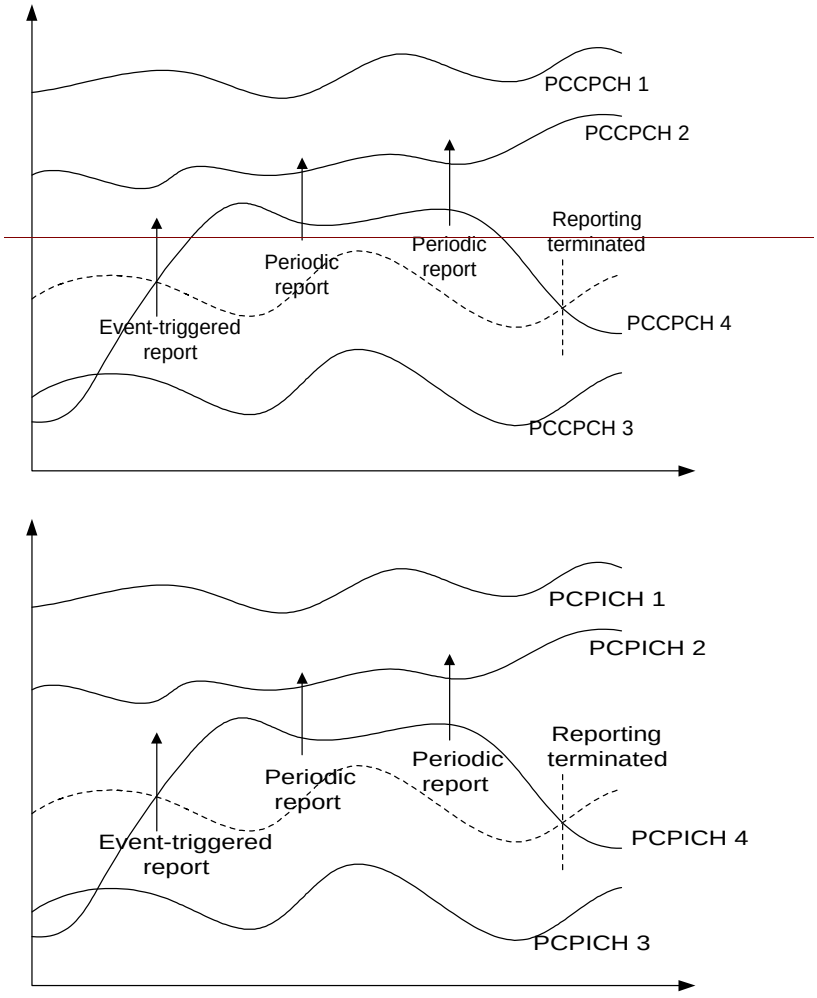

Figure 72: Periodic reporting triggered by event 1C

When a cell enters the replacement range and triggers event 1C, the UE shall transmit a MEASUREMENT REPORT to the UTRAN and typically this may result in the replacement of the weakest active cell. If the UTRAN is unable to replace the cell due to for example capacity shortage, it is beneficial to receive continuous reports in this case as well.

The UE shall revert to periodical measurement reporting if the UTRAN does not update the active set after the transmission of the measurement report. This is illustrated in Figure 72. During periodic reporting the UE shall transmit MEASUREMENT REPORT messages to the UTRAN at predefined intervals. The reports shall include reporting information of the cells in the current active set and of the monitored cell(s) in the replacement range.

Event-triggered periodic measurement reporting shall be terminated, if:

- ~~either when~~ there are no longer any monitored cell(s) within the replacement range, or; ~~when~~
- the UTRAN has removed cells from the active set so that there are no longer the minimum amount of active cells for event 1C to be triggered (as defined by the **replacement activation threshold** parameter).
- the UE has sent the maximum number of MEASUREMENT REPORT messages (defined by the **amount of reporting** parameter).

The reporting period is assigned by the UTRAN (with the **Reporting interval** parameter). If the reporting ~~period~~ interval is set to zero, event-triggered measurement reporting shall not be applied.

~~NOTE: The figure should be updated to reflect that the measurements are made on the CPICH rather than PCCPCH.~~

14.1.5.4 Forbid a Primary CPICH to affect the reporting range (FDD only)

The reporting range affects the reporting events 1A and 1B presented above. The reporting range is defined as a function of all the Primary CPICHs in the active set (see 14.1.2.1 and 14.1.2.2). If the parameter W is set to 0, the reporting range is defined relative to the best Primary CPICH. However, there could be cases where it is good to forbid a specific Primary CPICH to affect the reporting range. For example in Figure 78 the network has requested the UE to not let Primary CPICH 3 affect the reporting range. This mechanism could be effective if the operator knows by experience that the quality of Primary CPICH 3 is very unstable in a specific area and therefore should not affect the reporting of the other Primary CPICHs.

The UE shall ignore that a Primary CPICH is forbidden to affect the reporting range if all of the following conditions are fulfilled:

The Primary CPICH is included in active set.

All cells in active set are defined as Primary CPICHs forbidden to affect the reporting range.

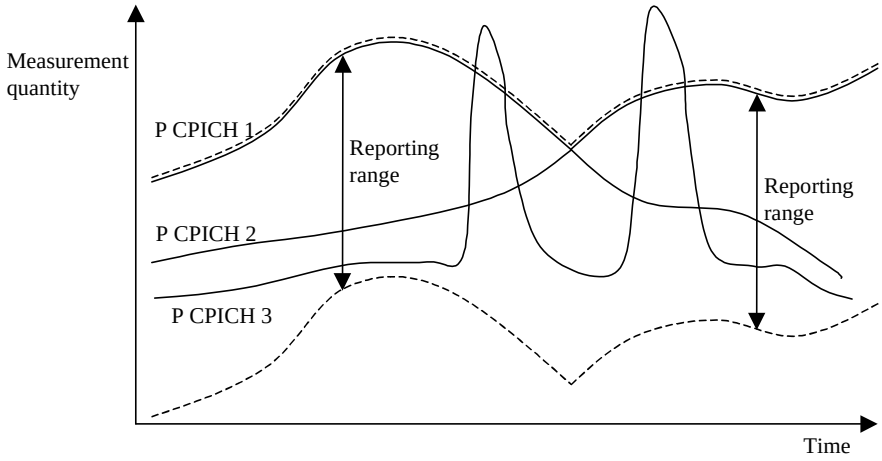

Figure 78: Primary CPICH 3 is forbidden to affect the reporting range

14.1.6 Report quantities

In the event-triggered measurement reports, mandatory information connected to the events is always reported. For instance, at the event "a primary CPICH(FDD)/CCPCH(TDD) enters the reporting range" the corresponding report identifies the primary CPICH(FDD)/CCPCH(TDD) that entered the range.

However, besides this mandatory information, UTRAN should be able to optionally require additional measurement information in the report to support the radio network functions in UTRAN. Furthermore, it will allow the UTRAN to use the UE as a general tool for radio network optimisation if necessary.

Examples of report quantities that may be appended to the measurement reports are:

~~NOTE: This list is general and does also apply for reports of other measurement types than the intra-frequency type. The list is not final.~~

- Downlink transport channel block error rate.
- ~~Downlink transport channel bit error rate.~~
- Downlink E_c/I_0 on primary CPICH(FDD)/CCPCH(TDD) (e.g. used for initial DL power setting on new radio links).
- Time difference between the received primary CPICH(FDD)/CCPCH(TDD) frame-timing from the target cell and the earliest received existing DPCH path. [Note: This measurement is identified in 25.211 [2] (denoted T_m in clause 7)].
- UE transmit power.
- UE position ~~(FFS).~~
- ~~Downlink SIR (RSCP/ISCP) on the traffic channels after RAKE combining (FFS).~~

14.2.1 Inter-frequency reporting events

Within the measurement reporting criteria field in the MEASUREMENT CONTROL message UTRAN notifies the UE which events should trigger the UE to send a MEASUREMENT REPORT message. Examples of inter-frequency reporting events that would be useful for inter-frequency handover evaluation are given below. Note that normally the UEs do not need to report all these events. The listed events are the toolbox from which the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.

All events are evaluated with respect to one of the measurement quantities given in subclause 14.1~~x~~.1~~x~~. The measurement objects are the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in TDD mode. A "non-used frequency" is a frequency that the UE have been ordered to measure upon but are not used of the active set. A "used frequency" is a frequency that the UE have been ordered to measure upon and is also currently used for the connection.

14.3.2 GSM measurements in compressed mode

14.3.2.1 GSM RSSI measurements

The UE shall perform GSM RSSI measurements in the gaps of compressed mode pattern sequence specified for GSM RSSI measurement purpose. The UE cannot be required to measure "Observed time difference to GSM " in gaps specified for this purpose.

14.3.2.2 Initial BSIC identification

The UE shall perform Initial BSIC identification in compressed mode pattern sequence specified for Initial BSIC identification measurement purpose.

The UE shall be able to measure the "Observed time difference to GSM cell" during a compressed mode pattern sequence configured for this purpose.

14.3.2.3 BSIC re-confirmation

The UE shall perform BSIC re-confirmation in compressed mode pattern sequence specified for BSIC re-confirmation measurement purpose.

The UE shall be able to measure the "Observed time difference to GSM cell" during a compressed mode pattern sequence configured for this purpose.

14.4.1 Traffic Volume Measurement Quantity

For traffic volume measurements in the UE only one quantity is measured. This quantity is RLC buffer payload in number of bytes. In order to support a large variation of bit rates and RLC buffer size capabilities, a non-linear scale should be used ~~*[NOTE: details are FFS]*~~. Since, the expected traffic includes both new and retransmitted RLC payload units all these should be included in the payload measure. It should also be noted that traffic volume measurements are only applicable for acknowledged and unacknowledged mode.

According to what is stated in the Measurement Control message, the UE should support measuring of buffer payload for a specific RB, RBs multiplexed onto the same Transport channel and the total UE buffer payload (the same as one transport channel for a UE that uses RACH).

14.x Quality Measurements

14.x.1 Quality reporting measurement quantities

For quality measurements, the following measurement quantities are used:

1. Downlink transport channel BLER
2. Timeslot SIR (TDD only)

14.x.1 Quality reporting events

14.x.1.1 Reporting event 5A: A predefined number of bad CRCs is exceeded

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the amount of bad CRCs during a predefined sliding window exceeds a predefined number.

The following three parameters are used in the scheme:

- **Total CRC** = the length of the sliding window over which the number of bad CRCs are counted.
- **Bad CRC** = the number of bad CRC that is required within the latest "Total CRC" received CRCs for the event to be triggered.
- **Pending after trigger** = a new event can not be triggered until "Pending after trigger" CRCs have been received,

When a DCH is established, the UE shall begin to count the number of bad CRCs within the last "Total CRC" received CRCs. No event can be triggered until at least "Total CRC" CRCs have been received. For each new received CRC, the UE shall compare the number of bad CRCs within the latest "Total CRC" received CRCs with the parameter "Bad CRC". An event shall be triggered if the number of bad CRCs is equal or larger than "Bad CRC".

At the time when the event is triggered a pending time after trigger timer is started with the length of "Pending after trigger" CRCs. A new event can not be triggered until Pending after trigger" CRCs have been received. When Pending after trigger" CRCs have been received the event evaluation start again and a new event can be triggered

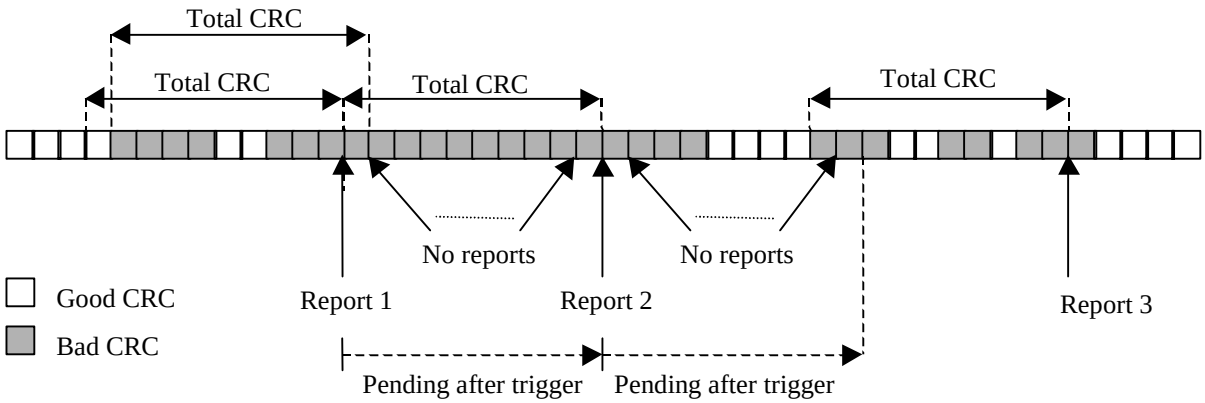

Figure x. Event triggered CRC error reporting

14.11 Versatile Channel Assignment Mode (VCAM) mapping rule (FDD only)

When Versatile Channel Assignment Method (VCAM) is used in the CPCH procedure, the following mapping rules shall be used to specify one PCPCH.

If the number of PCPCHs is less than or equal to 16, there is a one to one mapping between the CA index and the PCPCH index. Thus a suitable AP signature (and/or AP sub-channel) number is transmitted for the required spreading factor based on the broadcast system information, and the assigned PCPCH index (having the requested spreading factor) corresponds to the received CA index.

When the number of PCPCHs is greater than 16, a combination of an AP signature (and/or AP sub-channel) number and a CA signature number specifies one PCPCH as follows:

In VCAM mapping rule, a combination of an AP signature (and/or AP sub-channel) number and a CA signature number specifies one PCPCH. In a CPCH set, there are K available PCPCHs which are numbered k=0,1,…, K-1, and there are R available Minimum Spreading Factor A_r, r=0,1,…,R-1, that a UE can request and use. The maximum available number of PCPCHs and the number of available AP signatures (and/or AP sub-channels) for A_r are denoted as $P0_r$ and S_r, respectively, for r=0,1,…,R-1. Let P_r be equal to 16 if $P0_r$ is less than 16 and to $P0_r$ otherwise. T_r represents the number of CA signatures for A_r which are needed for specifying PCPCH. The default value of T_r is 16.

S_r always satisfies $S_r \geq \min\{s : s \in N, s \times T_r \geq P_r\}$ ~~$S_r \geq \min\{s : s \times T_r \geq P_r\}$.~~, where N is the set of positive integers.~~:~~

The list of available AP signatures (and/or AP sub-channels) for each A_r is renumbered from signature index 0 to signature index S_r -1, starting with the lowest AP signature (and/or AP sub-channel) number, and continuing in sequence, in the order of increasing signature numbers.

Then for given AP signature (and/or AP sub-channel) number and CA signature number, the number k that signifies the assigned PCPCH is obtained as:

~~$k = \{[(i+n) \bmod S_r] + j S_r\} \bmod P_r$,~~ $k = \{[(i+n) \bmod S_r] + j \times S_r\} \bmod P_r$,

where i (i=0,1,…,S_r-1) is the AP signature (and/or AP sub-channel) index for A_r, j (j=0,1,…,min(P_r,T_r)-1) is the CA signature number for A_r and n is a nonnegative integer which satisfies

~~$n M_r S_r \leq i + j S_r < (n+1) M_r S_r$~~ where ~~$M_r = \min\{m : (m S_r) \bmod P_r = 0\}$~~
$n \times M_r \times S_r \leq i + j \times S_r < (n+1) \times M_r \times S_r$ where $M_r = \min\{m : m \in N, (m \times S_r) \bmod P_r = 0\}$.

An example of the above mapping rule is shown in ~~subclause 18.1~~Annex X of TR 25.922.

3GPP TSG RAN WG2 Meeting #17
Sophia Antipolis, France, 13-17 November, 2000

Tdoc R2-002446

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **590** ⌘ rev **r1** ⌘ Current version: **3.4.1** ⌘

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

Title:	⌘	~~Inter-system classmark~~Inter-RAT UE radio access capability
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	***Date:*** ⌘ 17.11.2000
Category:	⌘ **F**	***Release:*** ⌘ R99

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

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

Reason for change: ⌘

When a relocation is triggered from source RNC to target BSC, classmark 2 and classmark 3 need to be available from the UTRAN to the Iu interface. In the current RRC specification, classmark 2 and classmark 3 are conveyed inside the "inter-system message" IE in bitstring format. In the RANAP protocol, however, classmark 2 and classmark 3 are coded in octet strings. This means that the RNC has to decode the inter-system message received from the air interface from one format and code it to another to be able to send it on the Iu interface. The intention of using the bitstring format in RAN WG2 has been to introduce a "generic" container so that changes in the GSM specification would not imply any changes to the RRC protocol.

However, using a generic bitstring causes problems, because the UTRAN also needs to decode the contents of the GSM classmarks in order to obtain multiband information. The UTRAN needs multiband information in order to configure the correct type of inter-system measurements with the MEASUREMENT CONTROL message. The decoding requirement in the UTRAN means that the inter-system classmark should be explicitly defined in the UE-UTRAN protocols AND in UTRAN-CN protocols, because the UE-CN protocols are not terminated in the RNC. There are two possible solutions:

1. Explicitly define the inter-system classmark contents in the RRC and RANAP protocols

2. Make a reference to the classmark definitions in 24.008 and carry classmarks with octet strings in the RRC and RANAP protocols.

The proposal is to choose the second alternative. The RANAP protocol already applies this.

Note that in the current 24.008, there is no such IE nor message as "classmark" defined. At least one of the specifications needs to indicate what is passed over the air interface.

	Changes in revision 1 of this CR: The IE Inter-system classmark has been renamed to Inter-RAT UE radio access capability. GSM Classmark 3 has now been defined as an open octet string instead of a fixed-size octet string. Spare values have been removed, since the IE is a critical one. The referencing for 24.008 has been corrected. The reference for the CDMA2000 specifications will be added in another CR later.
Summary of change: ⌘	The "inter-system message" IE is replaced with the "inter-system classmark" IE in RRC CONNECTION SETUP COMPLETE and in UE CAPABILITY INFORMATION. The "inter-system classmark" IE is defined.
Consequences if not approved: ⌘	If this change is not made and the specification is left as it is today, the following issues will be left open: 1. Where are the contents of the "inter-system message" defined? 2. Which classmark is conveyed first, CM2 or CM3? 3. If there will be more classmarks in the future, how will the UE and UTRAN know which of them are included in the "inter-system message"?

Clauses affected:	⌘	10.2.42, 10.2.57, 10.3.8.x, 11.2, 11.3.8		
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

10.2.42 RRC CONNECTION SETUP COMPLETE

This message confirms the establishment of the RRC Connection by the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
START list	MP	1 to <maxCNdomains>		START [TS 33.102] values for all CN domains.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.36	START value to be used in this CN domain.
UE information elements				
UE radio access capability	OP		UE radio access capability 10.3.3.40	
Other information elements				
UE system specific capability	OP		Inter-RAT UE radio access capability~~Inter-system message classmark~~ 10.3.8.x~~6~~	

10.2.57 UE CAPABILITY INFORMATION

This message is sent by UE to convey UE specific capability information to the UTRAN.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.14	Integrity check info is included if integrity protection is applied
UE radio access capability	OP		UE radio access capability 10.3.3.40	
Other information elements				
UE system specific capability	OP		Inter-RAT UE radio access capability~~Inter-system message classmark~~ 10.3.8.x~~6~~	~~Includes inter-system classmark~~

10.3.8.x ~~Inter-system classmark~~Inter-RAT UE radio access capability

This Information Element contains the ~~inter-system classmark~~ inter-RAT UE radio access capability which 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
CHOICE *system*	MP			~~At least 14 spare choices, Criticality: reject, are needed~~
>GSM				
>> Mobile Station Classmark 2	MP		Octet string (5)	Defined in ~~UMTS~~ [~~524.008~~]
>> Mobile Station Classmark 3	MP		Octet string ~~(14)~~	Defined in ~~UMTS~~ [~~524.008~~]
>cdma2000				
>>cdma2000Message	MP	1.to.<maxInterSysMessages>		
>>>MSG_TYPE(s)	MP		Bitstring (8)	Formatted and coded according to cdma2000 specifications
>>>cdma2000Messagepayload(s)	MP		Bitstring (1..512)	Formatted and coded according to cdma2000 specifications

11.2 PDU definitions

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

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-SystemSpecificCapability     InterSystemMessageInterSystemClassmarkInterRAT-UE-
RadioAccessCapability                   OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}



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

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-SystemSpecificCapability     InterRAT-UE-RadioAccessCapabilityInterSystemClassmarkMessage
                                        OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}
```

11.3.8 Other information elements

```
CellValueTag ::=                    INTEGER (1..4)

GSM-classmark2::=                   OCTET STRING (SIZE (5))

GSM-classmark3::=                   OCTET STRING (SIZE (14))

GSM-MessageList ::=                 SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..512))

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

InterSystemHO-Failure ::=           SEQUENCE {
    interSystemHO-FailureCause          InterSystemHO-FailureCause          OPTIONAL,
    interSystemMessage                  InterSystemMessage                  OPTIONAL
}
```

3GPP TSG RAN WG2#17
Sophia-Antipolis, France, 13th –17th Nov., 2000

Document R2-002435
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.331	CR	592r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2			**Date:**	2000-11-17	
Subject:	Clarification on cell update/URA update procedures					
Work item:						

Category: *(only one category shall be marked with an X)*				**Release:**		
	F	Correction	X		Phase 2	
	A	Corresponds to a correction in an earlier release			Release 96	
	B	Addition of feature			Release 97	
	C	Functional modification of feature			Release 98	
	D	Editorial modification			Release 99	X
					Release 00	

Reason for change:	A URA update message is not preceded by a cell update message. Current text in 8.3.1.2 (as part of the cell update procedure) suggests that this is the case. The corresponding sentence is changed for clarification.
Clauses affected:	8.3.1.2

Other specs affected:				
	Other 3G core specifications		→ List of CRs:	
	Other GSM core specifications		→ List of CRs:	
	MS test specifications		→ List of CRs:	
	BSS test specifications		→ List of CRs:	
	O&M specifications		→ List of CRs:	

Other comments:	

8.3.1.2 Initiation

A UE in CELL_FACH, CELL_PCH or URA_PCH state shall initiate the cell update procedure in the following cases:

- Cell reselection: In CELL_FACH or CELL_PCH state, the UE selects another cell.
- Periodic cell update: In CELL_FACH and CELL_PCH state, the timer T305 expires while the UE detects "in the service area" (as specified in 8.5.9) and periodic cell updating has been required in IE "Information for periodical cell and URA update" in System Information Block Type 2.

- RB control response: The UE receives an RB control message initiating a transition from CELL_DCH to CELL_FACH state, but the message does not indicate which cell to camp on. Consequently the UE selects a cell autonomously.

- UL data transmission (RB 3 – 32): In CELL_PCH state and URA_PCH state, the UE makes a state transition to CELL_FACH state in order to transmit UL data

- Paging response: In CELL_PCH and URA_PCH state, the UE receives a PAGING TYPE 1 message as in subclause 8.1.2.3.

- Re-entering service area: In URA_PCH state, the UE has been out of service area and re-enters service area before T307 expires.

In order to initiate the cell update procedure, the UE shall :

- set the variable PROTOCOL_ERROR_INDICATOR to FALSE;

- move to CELL_FACH state, if not already in that state;

- consider the stored C-RNTI to be invalid until CELL UPDATE CONFIRM message is received when UE detects a new cell;

- suspend data transmission on RB 3 and upward, if RLC-AM or RLC-UM is used on those radio bearers;

- transmit a CELL UPDATE message on the uplink CCCH;

- start timer T302 and reset counter V302.

The UE shall set the IEs in the CELL UPDATE as follows:

- indicate the reason for CELL update in the IE "CELL update cause" corresponding to the initiation cause as listed above;

- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE, the UE shall set the IE "Protocol error indicator" to TRUE and include the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION.

- if the value of the variable PROTOCOL_ERROR_INDICATOR is FALSE, the UE shall set the IE "Protocol error indicator" to FALSE.

- If the UE detects unrecoverable error (amount of the retransmission of RESET PDU reaches the value of Max DAT and receives no ACK) in an AM RLC entity for the signalling link, the UE shall set the IE "AM_RLC error indication". If the UE detects unrecoverable error in an AM RLC entity (for u-plane) for u-plane link, the UE shall set the IE "AM_RLC error indication (for u-plane)".

- The UE shall include the START values from each CN domain in CELL UPDATE message.

The UE shall include an intra-frequency measurement report in IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in system information block type 12 (or type 11, if system information block type 12 is not being broadcast).

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Sophia Antipolis, France, Nov. 13-17th 2000

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e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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25.331	CR	595r4	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic	X	

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** 14-11-2000

Subject: Protocol States and Process (CR C)

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: This CR rewrites section 9 to capture only the normative description of UE states. The more descriptive part moves to a new informative annex.
Editorial reorganization of sections 4-7, 9, 15, 16

Clauses affected: 4, 5, 6, 7, 9,15,16, Annex B (new)

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: In order to ease the checking of the differences, the text moved from section 9 to Annex B is only marked as revised in Annex B if actually modified.


help.doc

<--------- double-click here for help and instructions on how to create a CR.

4 General

4.1 Overview of the specification

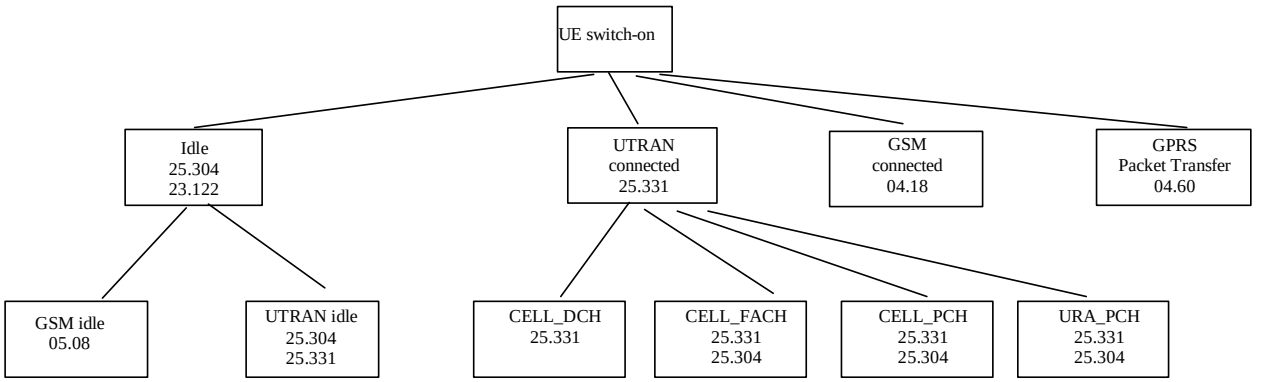
This specification is organised according to the following:

- Section 4 contains the description of the model of the RRC protocol layer;
- Section 5 lists the RRC functions and the services provided to upper layers;
- Section 6 lists the services expected from the lower layers and specifies the radio bearers available for usage by the RRC messages;
- Section 7 specifies the UE states for the Access Stratum, and also describes the processes which are running in the UE in those states;
- Section 8 specifies RRC procedures, including UE state transitions;
- Section 9 specifies the procedures for the handling of unknown, unforeseen, and erroneous protocol data by the receiving entity;
- Section 10 describes the message in Tabular format; these messages descriptions are referenced in section 8;
- Section 11 describes the encoding of the messages of the RRC protocol. This is based on the Tabular description of section 9.
- Section 12 describes the transfer syntax for RRC PDUs derived from the encoding definition;
- Section 13 lists the protocol timers, counters, constants and variables to be used by the UE;
- Section 14 specifies some processes applicable in RRC connected mode e.g. measurement processes. Note that not all the processes applicable in RRC connected mode are specified here i.e. some RRC connected mode processes are described in TS 25.304 e.g. cell re-selection; this section specifies also the RRC information to be transferred between network nodes;

Annex A contains recommendations about the network parameters to be stored on the USIM;

Annex B contains informative Stage 2 description of the RRC protocol states and state transition.

The following diagram summarizes the mapping of UE states, including GSM, on the 3GPP and GSM specification which describes the UE behavior.



4.2 RRC Layer Model

The functional entities of the RRC layer are described below:

- Routing of higher layer messages to different MM/CM entities (UE side) or different core network domains (UTRAN side) is handled by the Routing Function Entity (**RFE**)

- Broadcast functions are handled in the broadcast control function entity (**BCFE**). The BCFE is used to deliver the RRC services, which are required at the GC-SAP. The BCFE can use the lower layer services provided by the Tr-SAP and UM-SAP.

- Paging of UEs that do not have an RRC connection is controlled by the paging and notification control function entity (**PNFE**). The PNFE is used to deliver the RRC services that are required at the Nt-SAP. The PNFE can use the lower layer services provided by the Tr-SAP and UM-SAP.

- The Dedicated Control Function Entity (**DCFE**) handles all functions specific to one UE. The DCFE is used to deliver the RRC services which are required at the DC-SAP and can use lower layer services of UM/AM-SAP and Tr-SAP depending on the message to be sent and on the current UE service state.

- In TDD mode, the DCFE is assisted by the Shared Control Function Entity (SCFE) location in the C-RNC, which controls the allocation of the PDSCH and PUSCH using lower layers services of UM-SAP and Tr-SAP.

- The Transfer Mode Entity (TME) handles the mapping between the different entities inside the RRC layer and the SAPs provided by RLC.

NOTE: Logical information exchange is necessary also between the RRC sublayer functional entities. Most of that is implementation dependent and not necessary to present in detail in a specification.

Figure 1 shows the RRC model for the UE side and Figure 2 and Figure 3 show the RRC model for the UTRAN side.

NOTE: The figure shows only the types of SAPs that are used. Multiple instances of Tr-SAP, UM-SAP and AM-SAP are possible. Especially, different functional entities usually use different instances of SAP types.

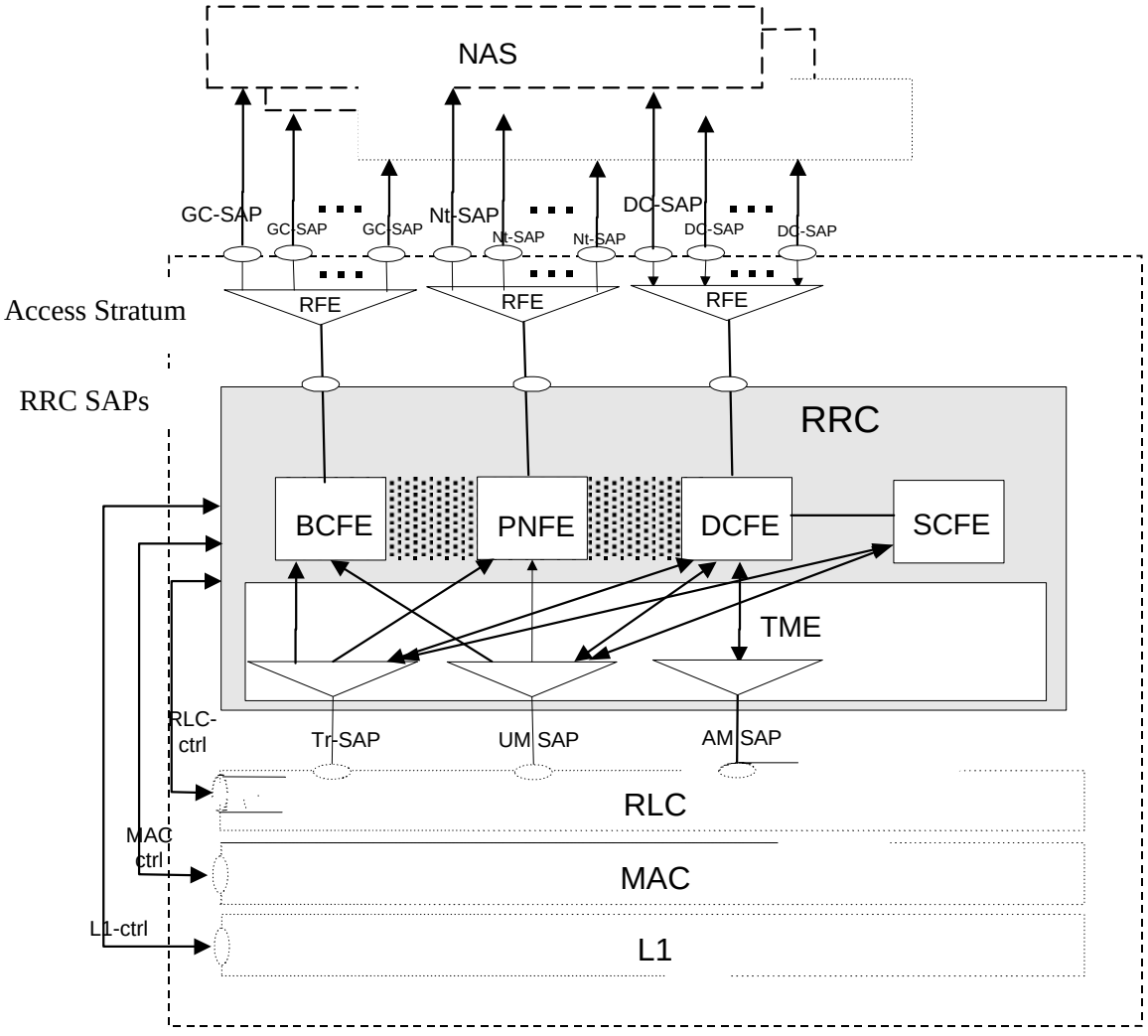


Figure 1: UE side model of RRC

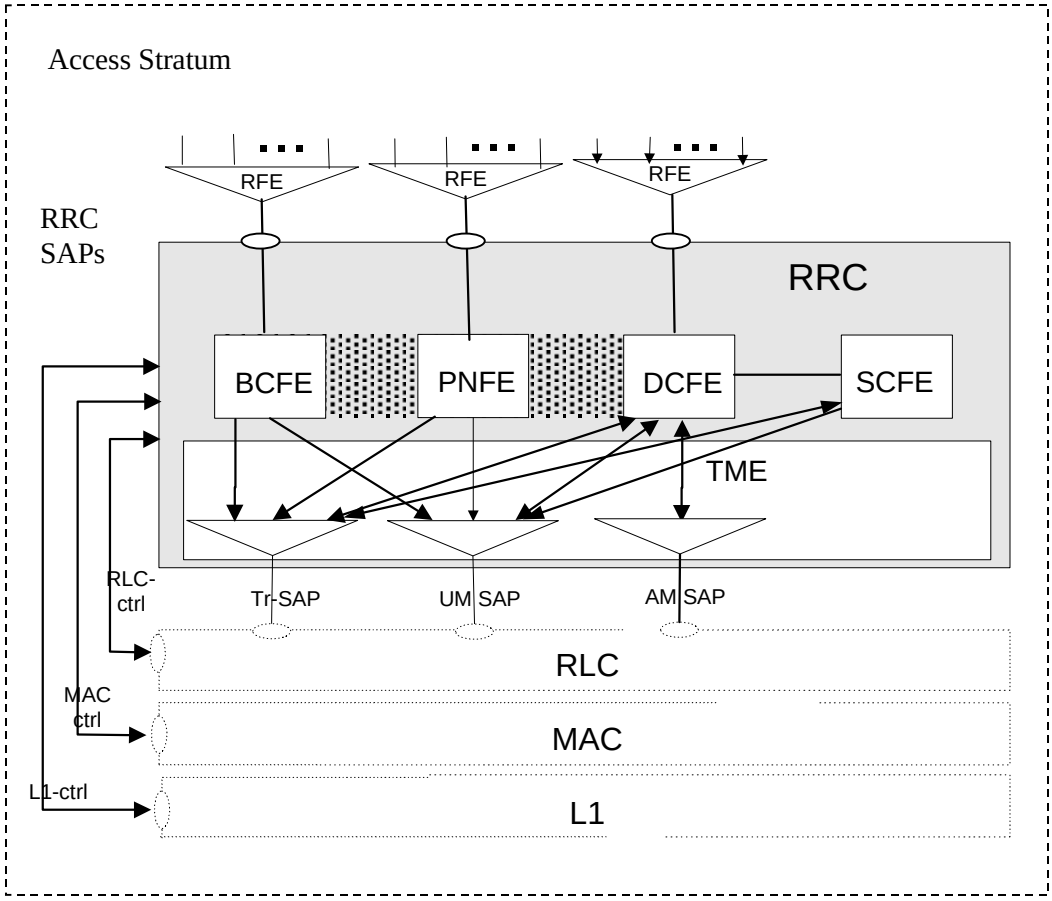


Figure 2: UTRAN side RRC model (DS-MAP system)

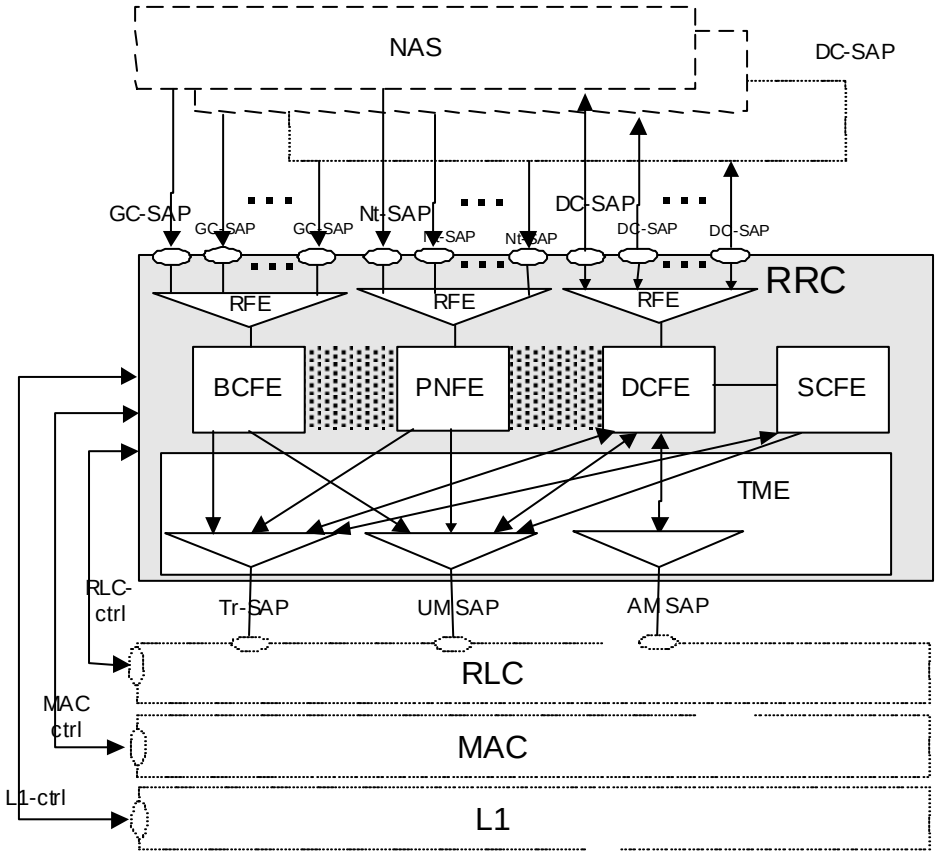


Figure 3: UTRAN side RRC model (DS-41 System)

5 RRC Functions and ~~RRC~~ Services provided to upper layers

5.1 RRC Functions

~~7 Functions of RRC~~

The RRC performs the functions listed below. A more detailed description of these functions is provided in 3G TS 25.301:

- Broadcast of information related to ~~provided by~~ the non-access stratum (Core Network);
- Broadcast of information related to the access stratum;
- Establishment, maintenance and release of an RRC connection between the UE and UTRAN;
- Establishment, reconfiguration and release of Radio Bearers;
- Assignment, reconfiguration and release of radio resources for the RRC connection;
- RRC connection mobility functions;
- ~~Routing of higher layer PDUs;~~
- Control of requested QoS;
- UE measurement reporting and control of the reporting;
- Outer loop power control;
- Control of ciphering;
- Slow DCA (TDD mode);
- Paging;
- Initial cell selection and cell re-selection;
- Arbitration of radio resources on uplink DCH;
- RRC message integrity protection;
- Timing advance (TDD mode);
- CBS control.

5.2 RRC Services provided to upper layers

The RRC offers the following services to upper layers, a description and primitives of these services are provided in [2], [17].

- General Control;
- Notification;
- Dedicated control.

5.3 Primitives between RRC and upper layers

The primitives between RRC and the upper layers are described in 3GPP TS 24.007.

6 Services expected from lower layers

6.1 Services expected from Layer 2

The services provided by layer 2 are described in [2], [15] and [16].

6.2 Services expected from Layer 1

The services provided by layer 1 are described in [2].

6.3 List of Signalling Radio Bearers ~~10.2 Radio Resource Control messages~~

~~In connected mode, RB 0, 1, 2, 3 and optionally 4 are available for usage by RRC messages using RLC-TM, RLC-UM and RLC-AM on the DCCH and CCCH.~~ The Radio Bearers available for usage by RRC messages using RLC-TM, RLC-UM and RLC-AM on the DCCH and CCCH are specified in the following. The UE and UTRAN shall select the radio bearers for RRC messages using RLC-TM, RLC-UM or RLC-AM on the DCCH and CCCH, according to the following:

- RB 0 shall be used for all messages sent on the CCCH.
- RB 1 shall be used for all messages sent on the DCCH, when using RLC unacknowledged mode (RLC-UM).
- RB 2 shall be used for all messages sent on the DCCH, when using RLC acknowledged mode (RLC-AM), except for except for the RRC messages carrying higher layer (NAS) signalling.~~the INITIAL DIRECT TRANSFER, DOWNLINK DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages.~~
- RB 3 and optionally~~or~~ RB 4 shall be used by the RRC messages carrying higher layer (NAS) signalling and ~~INITIAL DIRECT TRANSFER (RB 3), DOWNLINK DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages~~ sent on the DCCH in RLC acknowledged mode (RLC-AM), as specified in subclause 8.1.8., 8.1.9 and 8.1.10.
- For RRC messages on the DCCH using RLC transparent mode (RLC-TM), the transparent signalling DCCH shall be used.
- RRC messages on the SHCCH are mapped either on RACH or on the USCH with the lowest assigned Transport Channel Id in the uplink and either on FACH or on the DSCH with the lowest assigned Transport Channel Id using RLC-TM.
  These messages are only specified for TDD mode.

When an RRC message is transmitted in DL on CCCH or SHCCH using RLC UM, RRC should indicate to RLC that a special RLC length indicator should be used [16]. The UE shall assume that this indication has been given. The special length indicator indicates that an RLC SDU begins in the beginning of an RLC PDU.

7 Protocol states

7.1 Overview of RRC States and State Transitions including GSM

Figure XX shows the RRC states in Connected Mode, including transitions between UTRAN connected mode and GSM connected mode for PSTN/ISDN domain services, and between UTRAN connected mode and GSM/GPRS packet modes for IP domain services. It also shows the transitions between Idle Mode and UTRAN Connected Mode and further the transitions within UTRAN connected Mode.

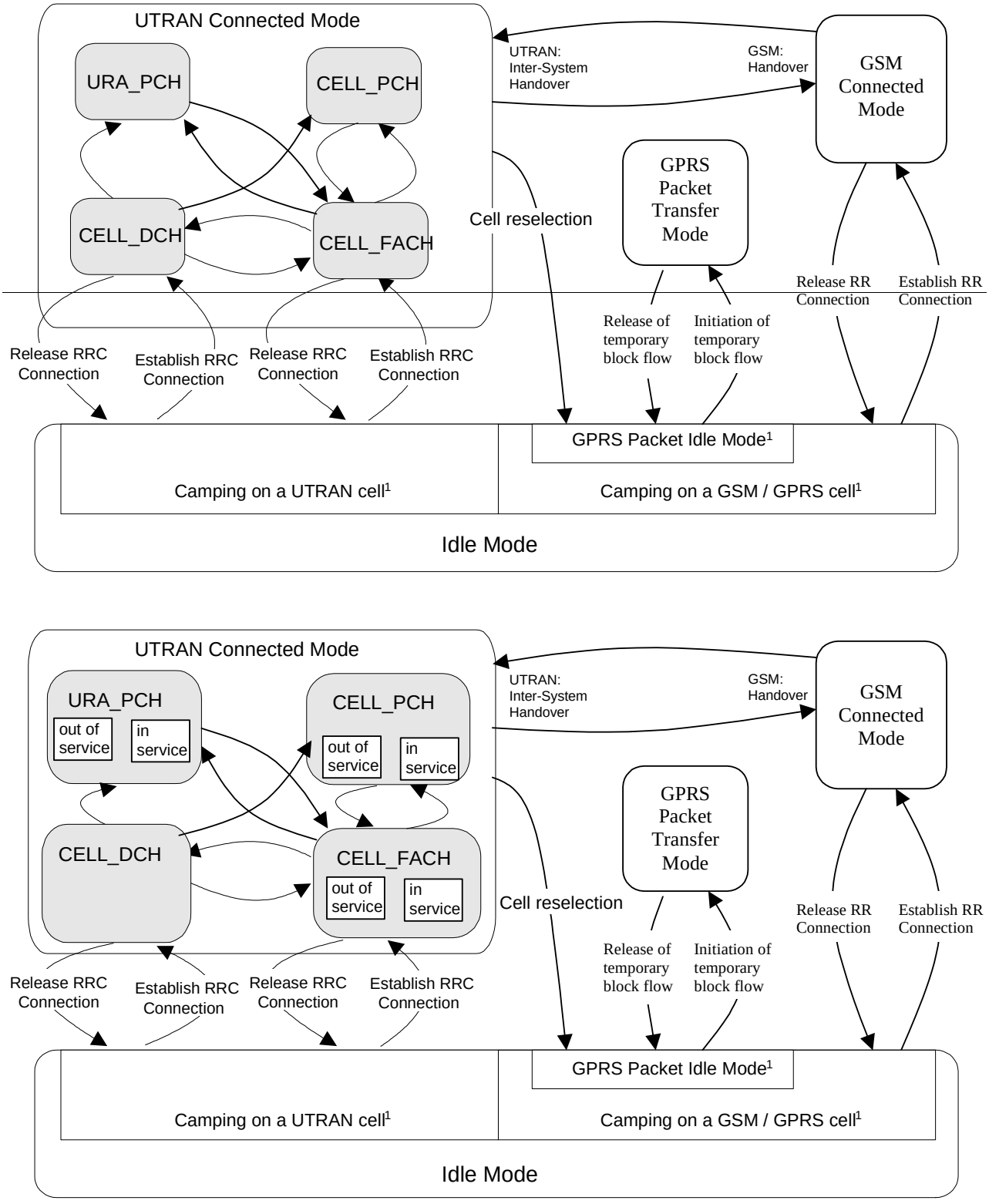


Figure ~~59:~~XX: RRC States and State Transitions including GSM
[1: The indicated division within Idle Mode is only included for clarification and shall not be ~~i~~nterpreted as states.]

The RRC connection is defined as a point-to-point bi-directional connection between RRC peer entities on the UE and the UTRAN sides characterised by the allocation of a U-RNTI. An UE has either zero or one RRC connection.

Note: The state transitions are specified in subclause 8.

7.2 Processes in UE modes / states

NOTE: This subclause specifies what processes shall be active in the UE in the different RRC modes / states. The related procedures and the conditions on which they are triggered are specified either in section 8 or elsewhere in the relevant process definition.

7.2.1 UTRAN Idle mode

UE processes that are active in UTRAN Idle mode are specified in 3GPP TS 25.304.

7.2.2 UTRAN RRC Connected mode

7.2.2.1 URA_PCH or CELL_PCH state

In the URA_PCH or CELL_PCH state the UE shall perform the following actions:

- if the UE is "in service area"

  - maintain up-to-date system information as broadcast by the serving cell as specified in the sub-clause 8.1.1;
  - perform cell reselection process as specified in 3GPP TS 25.304;
  - monitor the paging occasions according to the DRX cycle and receive paging information on the PCH;
  - perform measurements process according to measurement control information as specified in subclause 8.4 (8.1.1) and in subclause 14.4;
  - maintain up-to-date BMC data if it supports Cell Broadcast Service (CBS) as specified in 3GPP TS 25.324;
  - run timer T305 for periodical URA update if the UE is in URA_PCH or for periodical cell update if the UE is in CELL_PCH;

- if the UE is "out of service area"

  - perform cell reselection process as specified in 3GPP TS 25.304;
  - run timer T316 ;
  - run timer T~~306~~305 ~~.~~

7.2.2.2 CELL_FACH state

In the CELL_FACH state the UE shall perform the following actions:

- if the UE is "in service area"

  - DCCH and DTCH are available;
  - perform cell reselection process as specified in 3GPP TS 25.304;
  - perform measurements process according to measurement control information as specified in subclause 8.4 and in subclause 14.4;
  - run timer T305 (periodical cell update);
  - listen to all FACH transport channels mapped on S-CCPCH assigned to this UE;

- if the UE is "out of service area":

  - perform cell reselection process as specified in 3GPP TS 25.304;
  - run timers T305 (periodical cell update), and T317 (cell update when re-entering "in service") or T307 (transition to Idle mode)

7.2.2.3 CELL_DCH state

In the CELL_DCH state the UE shall perform the following actions:

- DCCH and DTCH are available;
- read system information broadcast on FACH as specified in subclause 8.1.1.3 (applicable only to UEs with certain capabilities and camping on FDD cells);
- read the system information as specified in 8.1.1 (for UEs camping on TDD cells);
- perform measurements process according to measurement control information as specified in subclause 8.4 and in section 14;

16~~9~~ Handling of unknown, unforeseen and erroneous protocol data

16~~9~~.1 General

This subclause specifies procedures for the handling of unknown, unforeseen, and erroneous protocol data by the receiving entity. These procedures are called "error handling procedures", but in addition to provide recovery mechanisms for error situations they define a compatibility mechanism for future extensions of the protocol.

The error handling procedures specified in this subclause shall apply to all RRC messages. When there is a specific handling for messages received on different logical channels this is specified.

When the UE receives an RRC message, it shall set the variable PROTOCOL_ERROR_REJECT to FALSE and then perform the checks in the order as defined below.

The procedures specified in clause 8 are applied only for the messages passing the checks as defined below, except when procedure specific handling is used to recover from the error.

16~~9~~.2 ASN.1 violation or encoding error

If the UE receives a message on the DCCH for which the encoded message does not result in a valid abstract syntax value, it shall perform the following:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Transmit an RRC STATUS message on the uplink DCCH. The IE "Protocol error information" shall contain an IE "Protocol error cause" set to "ASN.1 violation or encoding error".
- When the transmission of the RRC STATUS message has been confirmed by RLC, the UE shall resume normal operation as if the invalid message has not been received.

If the UE receives a message on the BCCH, PCCH, CCCH or SHCCH for which the encoded message does not result in a valid abstract syntax value, it shall ignore the message.

16~~9~~.3 Unknown or unforeseen message type

If a UE receives an RRC message on the DCCH with a message type reserved for future extension it shall:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Transmit an RRC STATUS message on the uplink DCCH. The IE "Protocol error information" shall contain an IE "Protocol error cause" set to "Message type non-existent or not implemented".
- When the transmission of the RRC STATUS message has been confirmed by RLC, the UE shall resume normal operation as if the invalid message has not been received.

If the UE receives a message on the BCCH, PCCH, CCCH or SHCCH with a message type reserved for future extension it shall ignore the message.

16~~9~~.4 Unknown or unforeseen information element value, mandatory information element

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, with a mandatory IE having a value, including choice, reserved for future extension the UE shall

- If criticality of the IE is defined as "Ignore" and if a default value of the IE is defined, treat the rest of the message using the default value of the IE.
- If criticality of the IE is defined as "Reject" or no default value of the IE is defined:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Information element value not comprehended".
- Perform procedure specific error handling according to clause 8.

If the UE receives an RRC message on the BCCH or PCCH with a mandatory IE having a value reserved for future extension it shall

- If criticality of the IE is defined as "Ignore" and if a default value of the IE is defined, treat the rest of the message using the default value of the IE.
- If criticality of the IE is defined as "Reject" or no default value of the IE is defined, ignore the message.

~~16~~9.5 Conditional information element error

If the UE receives an RRC message on the DCCH, BCCH, PCCH, or addressed to the UE on the CCCH, for which the specified conditions for absence of a conditional IE are met and that IE is present, the UE shall:

- Ignore the IE.
- Treat the rest of the message as if the IE was not present.

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, for which the specified conditions for presence of a conditional IE are met and that IE is absent, the UE shall:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Conditional information element error".
- Perform procedure specific error handling according to clause 8.

If the UE receives an RRC message on the BCCH or PCCH for which the specified conditions for presence of a conditional IE are met and that IE is absent, the UE shall ignore the message.

~~16~~9.6 Unknown or unforeseen information element value, conditional information element

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, for which the specified conditions for presence of a conditional IE are met, that IE is present, and that IE has a value, including choice, reserved for future extension, the UE shall

- If criticality of the IE is defined as "Ignore" and if a default value of the IE is defined, treat the rest of the message using the default value of the IE.
- If criticality of the IE is defined as "Reject" or no default value of the IE is defined:
  - Set the variable PROTOCOL_ERROR_REJECT to TRUE.
  - Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Information element value not comprehended".
  - Perform procedure specific error handling according to clause 8.

If the UE receives an RRC message on the BCCH or PCCH for which the specified conditions for presence of a conditional IE are met, that IE is present, and that IE has a value, including choice, reserved for future extension, the UE shall

- If criticality of the IE is defined as "Ignore" and if a default value of the IE is defined, treat the rest of the message using the default value of the IE.
- If criticality of the IE is defined as "Reject" or no default value of the IE is defined, ignore the message.

~~16~~9.7 Unknown or unforeseen information element value, optional information element

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, with an optional IE having a value, including choice, reserved for future extension and the criticality for that IE is specified as "ignore", it shall:

- Ignore the value of the IE.
- Treat the rest of the message as if the IE was not present.

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, with an optional IE having a value, including choice, reserved for future extension and the criticality for that IE is specified as "reject", it shall:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Information element value not comprehended".
- Perform procedure specific error handling according to clause 8.

If the UE receives an RRC message on the BCCH or PCCH with an optional IE having a value, including choice, reserved for future extension it shall:

- Ignore the value of the IE.
- Treat the rest of the message as if the IE was not present.

~~16~~9.8 Unexpected message extension

If the UE receives a message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, containing at least one information element in an extension for which a content is not defined, and therefore not expected, the UE shall check the criticality of that extension, if defined.

- If the criticality for the extension is defined and is set to "Ignore", the UE shall ignore the content of the extension and the message contents after the extension, but treat the parts of the message up to the extension normally.
- If the criticality for the extension is defined and is set to "Reject", or if the criticality is not defined, the UE shall:
  - Set the variable PROTOCOL_ERROR_REJECT to TRUE.
  - Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Message extension not comprehended".
  - Perform procedure specific error handling according to clause 8.

If the UE receives a message on the BCCH or PCCH, containing at least one information element in an extension for which a content is not defined, and therefore not expected, the UE shall check the criticality of that extension, if defined.

- If the criticality for the extension is defined and is set to "Ignore", the UE shall ignore the content of the extension and the message contents after the extension, but treat the parts of the message up to the extension normally.
- If the criticality for the extension is defined and is set to "Reject", or if the criticality is not defined, the UE shall ignore the message.

Annex B (informative): Description of RRC state transitions

This annex contains Stage 2 description of RRC states and state transitions.

B.1 RRC states and state transitions including GSM

After power on, the UE stays in Idle Mode until it transmits a request to establish an RRC Connection. In Idle Mode the connection of the UE is closed on all layers of the access stratum. In Idle Mode the UE is identified by non-access stratum identities such as IMSI, TMSI and P-TMSI. In addition, the UTRAN has no own information about the individual Idle Mode UEs, and it can only address e.g. all UEs in a cell or all UEs monitoring a paging occasion. The UE behaviour within this mode is described in [4].

The UTRAN Connected Mode is entered when the RRC Connection is established. The UE is assigned a radio network temporary identity (RNTI) to be used as UE identity on common transport channels.

~~NOTE: The exact definition of RRC connection needs further refinement.~~

The RRC states within UTRAN Connected Mode reflect the level of UE connection and which transport channels that can be used by the UE.

For inactive stationary data users the UE may fall back to PCH on both the Cell and URA levels. That is, upon the need for paging, the UTRAN ~~shall~~ checks the current level of connection of the given UE, and decides whether the paging message ~~shall be~~ is sent within the URA, or should it be sent via a specific cell.

~~9.2~~B.2 Transition from Idle Mode to UTRAN Connected Mode

The transition to the UTRAN Connected Mode from the Idle Mode can only be initiated by the UE by transmitting a request for an RRC Connection. The event is triggered either by a paging request from the network or by a request from upper layers in the UE.

When the UE receives a message from the network that confirms the RRC connection establishment, the UE enters the CELL_FACH or CELL_DCH state of UTRAN Connected Mode.

In the case of a failure to establish the RRC Connection the UE goes back to Idle Mode. Possible causes are radio link failure, a received reject response from the network or lack of response from the network (timeout).

B.2.1.~~9.2.1~~ Transitions for Emergency Calls

Refer to 3GPP TS 25.304 for all states and procedures referred to in this subclause. When UE leaves idle mode from state *Camped on any cell* in order to make an emergency call, moving to state *Connected mode (emergency calls only)*, the UE shall use the *Immediate cell evaluation* procedure (UTRA only) in order to select the best cell on the current frequency for the access attempt. If no suitable cell is found, the UE shall use the *Any cell reselection*. When returning to idle mode, the UE shall use the procedure *Cell selection when leaving connected mode* in order to find a suitable cell to camp on, state *Camped on any cell*.

B.3~~9.3~~ UTRAN Connected Mode States and Transitions

B.3~~9.3~~.1 CELL_DCH state

The CELL_DCH state is characterised by

- A dedicated physical channel is allocated to the UE in uplink and downlink.
- The UE is known on cell level according to its current active set.
- Dedicated transport channels, downlink and uplink (TDD) shared transport channels, and a combination of these transport channels can be used by the UE.

The CELL_DCH-state is entered from the Idle Mode through the setup of an RRC connection, or by establishing a dedicated physical channel from the CELL_FACH state.

A PDSCH may be assigned to the UE in this state, to be used for a DSCH. In TDD a PUSCH may also be assigned to the UE in this state, to be used for a USCH. If PDSCH or PUSCH are used for TDD, a FACH transport channel may be assigned to the UE for reception of physical shared channel allocation messages.

B.3.~~9.3.~~1.1 Transition from CELL_DCH to Idle Mode

Transition to Idle Mode is realised through the release of the RRC connection.

B.3.~~9.3.~~1.2 Transition from CELL_DCH to CELL_FACH state

Transition to CELL_FACH state occurs when all dedicated channels have been released, which may be

a) via explicit signalling.

at the end of the time period for which the dedicated channel was allocated (TDD)

~~9.3.~~B.3.1.3 Transition from CELL_DCH to CELL_PCH state

Transition to CELL_PCH state occurs via explicit signalling.

~~9.3.~~B.3.1.4 Transition from CELL_DCH to URA_PCH state

Transition to URA_PCH state occurs via explicit signalling.

~~9.3.~~B.3.1.5 Radio Resource Allocation tasks (CELL_DCH)

For the DCH, several physical channel allocation strategies may be applied. The allocations can be either permanent (needing a DCH release message) or based on time or amount-of-data.

Resource allocation can be done separately for each packet burst with fast signalling on the DCH

For each radio frame the UE and the network indicate the current data rate (in uplink and downlink respectively) using the transport format combination indicator (TFCI). However, in TDD, DCH and DSCH or USCH may be mapped on different CCTrCHs, their TFCI are totally independent. DCH transmission is not modified by the simultaneous existence of DSCH/USCH. If the configured set of combinations (i.e. transport format set for one transport channel) are found to be insufficient to retain the QoS requirements for a transport channel, the network initiates a reconfiguration of the transport format set (TFS) for that transport channel. This reconfiguration can be done during or in between data transmission. Further, the network can reconfigure the physical channel allowing an increase or decrease of the peak data rate.

For the uplink data transmission, the UE reports the observed traffic volume to the network in order for the network to re-evaluate the current allocation of resources. This report contains e.g. the amount of data to be transmitted or the buffer status in the UE.

~~9.3.~~B.3.1.6 RRC Connection mobility tasks (CELL_DCH)

Depending on the amount and frequency of data macrodiversity (soft handover) may or may not be applied.

The RRC Connection mobility is handled by measurement reporting, soft handover and non-synchronised or synchronised hard handover procedures.

~~9.3.~~B.3.1.7 UE Measurements (CELL_DCH)

The UE ~~shall~~ performs measurements and transmit measurement reports according to the measurement control information.

The UE ~~shall~~ uses the connected mode measurement control information received in other states until new measurement control information has been assigned to the UE.

~~9.3.~~B.3.1.8 Acquisition of system information (CELL_DCH)

FDD UEs with certain capabilities ~~shall~~ reads system information broadcast on FACH.

TDD UEs ~~shall~~ reads the BCH to acquire valid system information. For each acquisition, the UE may need different combinations of system information broadcast on BCH. The scheduling on the broadcast channel is done in such way that the UE knows when the requested information can be found.

~~9.3.~~B.3.2CELL_FACH state

The CELL_FACH state is characterised by:

- No dedicated physical channel is allocated to the UE.
- The UE continuously monitors a FACH in the downlink.
- The UE is assigned a default common or shared transport channel in the uplink (e.g. RACH) that it can use anytime according to the access procedure for that transport channel.
- The position of the UE is known by UTRAN on cell level according to the cell where the UE last made a cell update.
- In TDD mode, one or several USCH or DSCH transport channels may have been established.

~~In the CELL_FACH substate the UE shall perform the following actions:~~

- ~~listens to an FACH;~~
- ~~listens to the BCH transport channel of the serving cell for the decoding of system information messages;~~
- ~~initiates a cell update procedure on cell change of another UTRA cell;~~
- ~~use C-RNTI assigned in the current cell as the UE identity on common transport channels except for when a new cell is selected;~~
- ~~transmits uplink control signals and small data packets on the RACH;~~
- ~~in FDD mode, transmits uplink control signals and larger data packets on CPCH when resources are allocated to cell and UE is assigned use of those CPCH resources;~~
- ~~in TDD mode, transmits signalling messages or user data in the uplink and/or the downlink using USCH and/or DSCH when resources are allocated to the cell and the UE is assigned use of those USCH/DSCH resources;~~
- ~~in TDD mode, transmits measurement reports in the uplink using USCH when resources are allocated to it in order to trigger a handover procedure in the UTRAN.~~

~~9.3.~~B.3.2.1 Transition from CELL_FACH to CELL_DCH state

A transition occurs, when a dedicated physical channel is established via explicit signalling.

~~9.3.~~B.3.2.2 Transition from CELL_FACH to CELL_PCH state

The transition occurs when UTRAN orders the UE to move to CELL_PCH state, which is done via explicit signalling..

~~9.3.~~B.3.2.3 Transition from CELL_FACH to Idle Mode

Upon release of the RRC connection, the UE moves to the idle mode.

~~9.3.~~B.3.2.4 Transition from CELL_FACH to URA_PCH State

The transition occurs when UTRAN orders the UE to move to URA _PCH state, which is done via explicit signalling e.g. Upon completion of the URA update procedure.

~~9.3.~~B.3.2.5 Radio Resource Allocation Tasks (CELL_FACH)

In the CELL_ FACH state the UE will monitor an FACH. It is enabled to transmit uplink control signals and it may be able to transmit small data packets on the RACH.

The network can assign the UE transport channel parameters (e.g. transport format sets) in advance, to be used when a DCH is used. Upon assignment of the physical channel for DCH, the UE ~~shall~~ moves to CELL_DCH state and uses the pre-assigned TFS for the DCH.

If no UE dedicated physical channel or transport channel configuration has been assigned, the UE ~~shall~~ uses the common physical channel and transport channel configuration according to the system information.

For the uplink data transmission, the UE reports the observed traffic volume to the network in order for the network to re-evaluate the current allocation of resources. This report contains e.g. the amount of data to be transmitted or the buffer status in the UE.

When there is either user or control data to transmit, a selection procedure determines whether the data should be transmitted on a common transport channel, or if a transition to CELL_DCH should be executed. The selection is dynamic and depends on e.g. traffic parameters (amount of data, packet burst frequency).

In FDD mode, the UTRAN can assign CPCH resources to the UE in CELL_FACH state. When CPCH resources are assigned, the UE will continue to monitor FACHs. The UE may use the RACH to transmit uplink control signals and small data packets. The UE also may choose to transmit data packets, larger than those carried on the RACH, on the CPCH channel. The UE selects either the RACH or one of the CPCH channels to make maximum use of the capacity available on that channel.

In FDD mode, the UE provides the UTRAN with CPCH measurement data, which includes data, queue depth (current size of data buffers), average access time for each CPCH channel used, and average traffic volume on each CPCH channel used. With these measures, the UTRAN can reallocate network resources on a periodic basis. The UTRAN allocates CPCH Sets to each cell and assigns UEs to one of the cell's CPCH Sets. The UEs can dynamically access the CPCH resources without further UTRAN control.

In the TDD mode, the UTRAN can assign USCH / DSCH resources to the UE in CELL_FACH state. When USCH / DSCH resources are assigned, the UE will continue to monitor FACHs, depending on the UE capability. The UE may use the USCH / DSCH to transmit signalling messages or user data in the uplink and / or the downlink using USCH and / or DSCH when resources are allocated to cell and UE is assigned use of those USCH / DSCH.

For the uplink data transmission on USCH the UE reports to the network the traffic volume (current size of RLC data buffers), The UTRAN can use these measurement reports to re-evaluate the current allocation of the USCH / DSCH resources.

~~9.3.~~B.3.2.6 RRC Connection mobility tasks (CELL_FACH)

In this state the location of the UE is known on cell level. A cell update procedure is used to report to the UTRAN, when the UE selects a new cell to observe the common downlink channels of a new cell. Downlink data transmission on the FACH can be started without prior paging.

The UE monitors the broadcast channel and system information on BCCH of its own and neighbour cells and from this the need for the updating of cell location is identified.

The UE ~~shall~~ performs cell reselection and upon selecting a new UTRA cell, it ~~shall~~ initiates a cell update procedure. Upon selecting a new cell belonging to another radio access system than UTRA, the UE ~~shall~~ enters idle mode and makes an access to that system according to its specifications.

~~9.3.~~B.3.2.7 UE Measurements (CELL_FACH)

The UE ~~shall~~ performs measurements and transmit measurement reports according to the measurement control information.

By default, the UE ~~shall~~ uses the measurement control information broadcast within the system information. However, for measurements for which the network also provides measurement control information within a MEASUREMENT CONTROL message, the latter information takes precedence.

~~9.3.~~B.3.2.8 Transfer and update of system information (CELL_FACH)

The UE ~~shall~~ reads the BCH to acquire valid system information. For each acquisition, the UE may need different combinations of system information broadcast on BCH. The scheduling on the broadcast channel is done in such way that the UE knows when the requested information can be found.

When the system information is modified, the scheduling information is updated to reflect the changes in system information transmitted on BCH. The new scheduling information is broadcast on FACH in order to inform UEs about the changes. If the changes are applicable for the UE, the modified system information is read on BCH.

~~9.3.~~B.3.3CELL_PCH state

The CELL_PCH state is characterised by:

- No dedicated physical channel is allocated to the UE.
- The UE selects a PCH with the algorithm specified in subclause 8.5.7.6.3, and uses DRX for monitoring the selected PCH via an associated PICH.
- No uplink activity is possible.
- The position of the UE is known by UTRAN on cell level according to the cell where the UE last made a cell update in CELL_FACH state.

~~In this state the UE shall perform the following actions:~~

- ~~monitor the paging occasions according to the DRX cycle and receive paging information on the PCH;~~
- ~~listens to the BCH transport channel of the serving cell for the decoding of system information messages;~~
- ~~initiates a cell update procedure on cell change;~~
- ~~a UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in the CELL_PCH RRC state. If PCH and the FACH carrying CTCH are not mapped onto the same SCCPCH, UEs with basic service capabilities may not be able to monitor Cell Broadcast messages continuously in Cell_PCH state. In this case, UEs with basic service capabilities shall be capable to change from the SCCPCH that carries the PCH selected for paging to another SCCPCH which carries Cell Broadcast messages (i.e. the CTCH mapped to an FACH) and receive BMC messages during time intervals which do not conflict with the UE specific paging occasions.~~

The DCCH logical channel cannot be used in this state~~ub~~. If the network wants to initiate any activity, it needs to make a paging request on the PCCH logical channel in the known cell to initiate any downlink activity.

~~9.3.~~B.3.3.1 Transition from CELL_PCH to CELL_FACH state

The UE is transferred to CELL_FACH state either by paging from UTRAN or through any uplink access.

~~9.3.~~B.3.3.2 Radio Resource Allocation Tasks (CELL_PCH)

In CELL_PCH state no resources have been granted for data transmission. For this purpose, a transition to another state has to be executed.

The UE may use Discontinuous Reception (DRX) in order to reduce power consumption. When DRX is used the UE needs only to receive at one paging occasion per DRX cycle. The UE may be instructed to use a specific DRX cycle length by the network. The UE ~~shall~~ determines its paging occasions in the same way as for Idle Mode, see [4].

~~9.3.~~B.3.3.3 RRC Connection mobility tasks (CELL_PCH)

In the CELL_PCH state, the UE mobility is performed through cell reselection procedures, which may differ from the one defined in [4].

The UE ~~shall~~ performs cell reselection and upon selecting a new UTRA cell, it ~~shall~~ moves to CELL_FACH state and initiates a cell update procedure in the new cell. After the cell update procedure has been performed, the UE ~~shall~~ changes its state back to CELL_PCH state if neither the UE nor the network has any more data to transmit.

Upon selecting a new cell belonging to another radio access system than UTRA, the UE ~~shall~~ enters idle mode and makes an access to that system according to its specifications.

In case of low UE activity, UTRAN may want to reduce the cell-updating overhead by ordering the UE to move to the URA_PCH State. This transition is made via the CELL_FACH state. UTRAN may apply an inactivity timer, and optionally, a counter, which counts the number of cell updates e.g. UTRAN orders the UE to move to URA_PCH when the number of cell updates has exceeded certain limits (network parameter).

~~9.3.~~B.3.3.4 UE Measurements (CELL_PCH)

The UE ~~shall~~ performs measurements and transmit measurement reports according to the measurement control information.

The UE ~~shall~~ uses the measurement control information according to the system information when no UE dedicated measurement control information has been assigned.

~~9.3.~~B.3.3.5 Transfer and update of system information (CELL_PCH)

The UE ~~shall~~ reads the BCH to acquire valid system information. For each acquisition, the UE may need different combinations of system information broadcast on BCH. The scheduling on the broadcast channel is done in such way that the UE knows when the requested information can be found.

~~9.3.~~B.3.4URA_PCH State

The URA_PCH state is characterised by:

- No dedicated channel is allocated to the UE.
- The UE selects a PCH with the algorithm specified in subclause 8.5.7.6.3, and uses DRX for monitoring the selected PCH via an associated PICH.
- No uplink activity is possible.
- The location of the UE is known on UTRAN Registration area level according to the URA assigned to the UE during the last URA update in CELL_FACH state.

~~In this state the UE performs the following actions:~~

- ~~monitor the paging occasions according to the DRX cycle and receive paging information on the PCH;~~
- ~~listens to the BCH transport channel of the serving cell for the decoding of system information messages;~~
- ~~initiates a URA updating procedure on URA change;~~
- ~~a UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in the URA_PCH RRC state. If PCH and the FACH carrying CTCH are not mapped onto the same SCCPCH, UEs with basic service capabilities may not be able to monitor Cell Broadcast messages continuously in Cell_PCH state. In this case, UEs with basic service capabilities shall be capable to change from the SCCPCH that carries the PCH selected for paging to another SCCPCH which carries Cell Broadcast messages (i.e. the CTCH mapped to an FACH) and receive BMC messages during time intervals which do not conflict with the UE specific paging occasions.~~

The DCCH logical channel cannot be used in this state. If the network wants to initiate any activity, it needs to make a paging request on the PCCH logical channel within the URA where the location of the UE is known. If the UE needs to transmit anything to the network, it goes to the CELL_FACH state. The transition to URA_PCH State can be controlled with an inactivity timer, and optionally, with a counter which counts the number of cell updates. When the number of cell updates has exceeded certain limits (a network parameter), then the UE changes to the URA_PCH State.

URA updating is initiated by the UE, which, upon the detection of the Registration area, sends the network the Registration area update information on the RACH of the new cell.

~~9.3.~~B.3.4.1 Transition from URA_PCH State to CELL_FACH State (URA_PCH)

Any activity causes the UE to be transferred to CELL_ FACH State. Uplink access is performed by RACH .

Note that the release of an RRC connection is not possible in the URA_PCH State. The UE will first move to CELL_FACH State to perform the release signalling.

~~9.3.~~B.3.4.2 Radio Resource Allocation Tasks (URA _PCH)

In URA_PCH State no resources have been granted for data transmission. For this purpose, a transition to CELL_FACH State has to be executed.

The UE may use Discontinuous Reception (DRX) in order to reduce power consumption. When DRX is used the UE needs only to receive at one paging occasion per DRX cycle. The UE may be instructed to use a specific DRX cycle length by the network. The UE ~~shall~~ determines its paging occasions in the same way as for Idle Mode, see [4].

~~9.3.~~B.3.4.3 RRC Connection mobility tasks (URA_PCH)

In URA_PCH State the location of a UE is known on UTRAN Registration area level.

In this state, the UE mobility is performed through URA reselection procedures, which may differ from the definitions in S2.04. The UE ~~shall~~ performs cell reselection and upon selecting a new UTRA cell belonging to an URA which does not match the URA used by the UE, the UE ~~shall~~ moves to CELL_FACH state and initiates a URA update towards the network. After the URA update procedure has been performed, the UE ~~shall~~ changes its state back to URA_PCH state if neither the UE nor the network has any more data to transmit.

Upon selecting a new cell belonging to another radio access system than UTRA, the UE ~~shall~~ enters idle mode and make an access to that system according to its specifications (FFS).

~~9.3.~~B.3.4.4 UE Measurements (URA_PCH)

The UE ~~shall~~ performs measurements and transmit measurement reports according to the measurement control information.

The UE ~~shall~~ uses the measurement control information according to the system information when no UE dedicated measurement control information has been assigned.

~~9.3.~~B.3.4.5 Transfer and update of system information (URA_PCH)

The same mechanisms to transfer and update system information as for state CELL_PCH are applicable for UEs in URA_PCH state.

~~9.3.~~B.3.5 States and Transitions for Cell Reselection in URA_PCH, CELL_PCH, and CELL_FACH

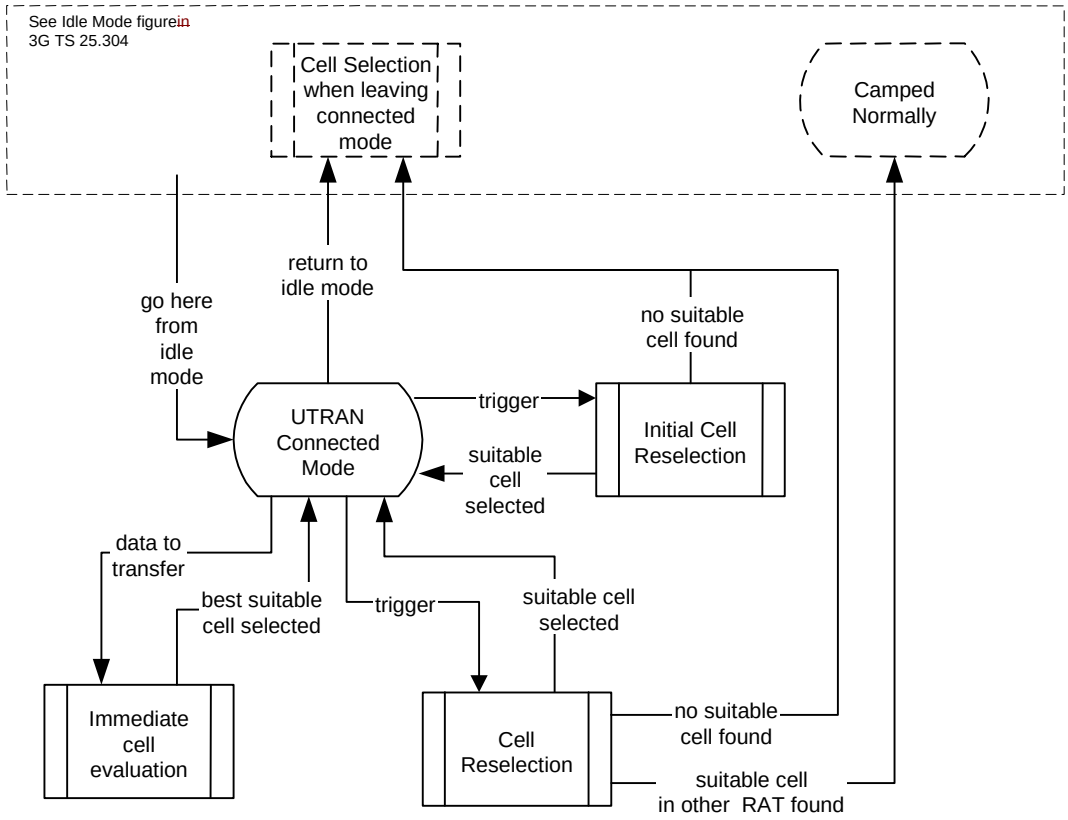


Figure 60: UTRAN Connected mode cell reselection for URA_PCH, CELL_PCH, and CELL_FACH

In some states the UE ~~shall~~ perform<u>s</u> cell reselection procedures. The UE ~~shall~~ select<u>s</u> a suitable cell (defined in 3G<u>PP</u> TS 25.304) and radio access technology based on connected mode radio measurements and cell reselection criteria.

Figure 60 shows the states and procedures in the cell reselection process in connected mode.

When a cell reselection is triggered, the UE ~~shall~~ evaluate<u>s</u> the cell reselection criteria based on radio measurements, and if a better cell is found that cell is selected, procedure *Cell reselection* (see 3G<u>PP</u> TS 25.304). If the change of cell implies a change of radio access technology, the RRC connection is released, and the UE enters idle mode of the other RAT. If no suitable cell is found in the cell reselection procedure, the RRC connection is released, and the UE enters idle mode.

The UE ~~shall~~ use<u>s</u> the *Immediate cell evaluation* procedure (see 3G<u>PP</u> TS 25.304) to select the best suitable cell prior to any access attempt, according to the immediate cell evaluation criteria. Constraints on the use of this procedure are specified in subclause xxxxxx.

When an Initial cell *reselection* is triggered, the UE shall use the *Initial cell reselection* procedure (see 3G<u>PP</u> TS 25.304) to find a suitable cell. The cases where this may be triggered are specified in subclause xxxxx. One example where this procedure is triggered is at radio link failure, where the UE may trigger an initial cell reselection in order to request re-establishment of the RRC connection. If the UE is unable to find a suitable cell, the UE shall release the RRC connection and enter idle mode.

<u>B.4</u>~~9.4~~ Inter-system handover with PSTN/ISDN domain services

When using PSTN / ISDN domain services, UTRAN is using an Inter-Radio access system Handover Procedure and GSM is using a Handover procedure for the transition from UTRAN Connected Mode to GSM Connected Mode.

B.59.5 Inter-system handover with IP domain services

When using IP domain services, the UE initiates cell reselection from a GSM/GPRS cell to a UTRAN cell and then uses the RRC Connection Establishment procedure for the transition to UTRAN Connected mode.

When the RRC Connection is established from Idle Mode (GPRS Packet Idle Mode) the RRC CONNECTION REQUEST message contains an indication, that UTRAN needs to continue an already established GPRS UE context from the CN. This indication allows UTRAN to e.g. prioritise the RRC CONNECTION REQUEST from the UE.

In UTRAN connected mode UTRAN is using UE or network initiated cell reselection to change from a UTRAN cell to a GSM/GPRS cell. If the cell reselection was successful the UE enters Idle Mode (GPRS Packet Idle Mode). The UE sends a packet channel request from Idle Mode (GPRS Packet Idle mode) to establish a Temporary Block flow and enter GPRS Packet Transfer Mode. In the GPRS Packet Transfer Mode the UE sends a RA Update request message. The RA Update Request message sent from the UE contains an indication that GSM/GPRS need to continue an already established UTRAN UE context from the CN. This means that the RA Update request is always sent for the transition from UTRAN Connected Mode to GSM/GPRS regardless if the RA is changed or not.

NOTE: The reason for using RA update instead of a new message is to reduce the impact on the existing GSM/GPRS specification.

B.69.6 Inter-system handover with simultaneous IP and PSTN/ISDN domain services

NOTE: This is an initial assumption that needs to be seen by SMG2 and requiring checking by SMG2, when the work on this item has progressed.

B.69.6.1 Inter-system handover UTRAN to GSM / BSS

For a UE in CELL_DCH state using both PSTN / ISDN and IP Domain services the Inter-system handover procedure is based on measurement reports from the UE but initiated from UTRAN.

The UE performs the Inter-system handover from UTRAN Connected Mode to GSM Connected Mode first. When the UE has sent handover complete message to GSM / BSS the UE initiates a temporary block flow towards GPRS and sends a RA update request.

If the Inter-system handover from UTRAN Connected Mode to GSM Connected Mode was successful the handover is considered as successful regardless if the UE was able to establish a temporary block flow or not towards GPRS.

In case of Inter-system handover failure the UE has the possibility to go back to UTRAN Connected Mode and re-establish the connection in the state it originated from without attempting to establish a temporary block flow. If the UE has the option to try to establish a temporary block flow towards GSM / GPRS after Inter-system handover failure is FFS.

B.6.9.6.2Inter-system handover GSM / BSS to UTRAN

For a UE in GSM Connected Mode using both PSTN / ISDN and IP domain services the Inter-system handover procedure is based on measurement reports from the UE but initiated from GSM / BSS.

The UE performs the Inter-system handover from GSM Connected Mode to UTRAN Connected Mode.

In UTRAN Connected Mode both services are established in parallel.

If the Inter-System handover from GSM Connected mode to UTRAN Connected Mode was successful the handover is considered as successful.

In case of Inter-system handover failure the UE has the possibility to go back to GSM Connected Mode and re-establish the connection in the state it originated from.

3GPP TSG RAN WG2#17
Sophia Antipolis, France, Nov 13th-Oct 17th2000

Document R2-002392
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	596r1	Current Version:	3.4.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2		**Date:**	2000-11-17	
Subject:	System Information, task force CR "B"				
Work item:					

Category: *(only one category shall be marked with an X)*				**Release:**		
	F	Correction	X		Phase 2	
	A	Corresponds to a correction in an earlier release			Release 96	
	B	Addition of feature			Release 97	
	C	Functional modification of feature			Release 98	
	D	Editorial modification			Release 99	X
					Release 00	

Reason for change:

This CR contains the changes to the system information procedure according to the decisions made at RAN2 #16 and the results of the work of the RRC task force.

Changes proposed in this CR are:
- Inclusion of 2 Scheduling blocks and removal of scheduling information in all SIBs.

- Removal of possibility to send any other system inforamtion blocks, MIB or SBs on FACH except for SIB10.

- Clarification on reception on MIB/SB or SIB. General concept is that when something is received unexpeced by the UE it may use the content (store with value tag NULL) but need to re-read the scheduling for that block.

- Restructioring of chapters to have first a General, then Reception of System information, MIB, SB, SIBs and last update of system information.

- Timers have been removed from SIB2 and are only included in SIB1. SIB 1 is only read in idle mode, but also used in connected mode. Utran mobility information procedure may update timers for a UE in connected mode.

- Removal of figure 5 since it caused more questions than answers

- Table 8.1.1 has been updated to include a column for when blocks are read and also a new column when blocks are used. The old Transport channel colun has been removed.

- Clarification of UE handling for re-assembly of SIB segments. Two error cases covered if segment index does not match expected SEG_COUNT. This may occur at update of system information.

- Reading/storing of MIB, SB and SIBs and how the UE may re-use stored SIBs based on the value tag is inlcuded.

- Modification of system information is clarified and UE actions for synchronized and non-synchronized cases are aligned.

- Error cases included when the UE tries to read updated system information.

- Inclusion of actions at expiry of expiry timer for SIBs not using value tag.

- Error cases included for critical SIBs which scheduling can not be found on system information. The principle is that the UE treats the cell as barred with the maximum Tbarred value.

- Editorial corrections to system information text

- UE timers and constants in CELL_DCH removed. These were used for the cse when connected mode timers should be used when going directly from idle to CELL_DCH after reception of RRC Connection Setup message. These timers and constants therefor had an overlap with UE timers and constants in connected mode.

- Clarification of segment index. Index 0 is used for first segment, the next segment after the first uses 1. This is in accordance with the formula in 8.1.1.1.5.

- SIB types are split into two types making signalling only support scheduling of SBs from the MIB.

- Corresponding updates to tabular format and ASN.1

Changes compared to last version of the CR (highlighted in yellow)
Correction to ASN.1 in the usage of LastSegmentShort for two combinations.
8.1.1.6.1 Clarification of "and" used in sentence with SIB1 and SIB13 so sentence has been refrased. Similar change for other SIBs.
Scheduling blocks added to SIB-type in the ASN.1
Inclusion of segmentaiton possibility of the MIB as before

Clauses affected:

8.1.1.1.1, 8.1.1.1.2, 8.1.1.1.3, 8.1.1.1.4, 8.1.1.1.5,
8.1.1.2, 8.1.1.3, 8.1.1.3.1, 8.1.1.3.2,
8.1.1.4, 8.1.1.4.1, 8.1.1.7.3 (new), 8.1.1.4.2, 8.1.1.4.3, 8.1.1.7.4 (new),
8.1.1.5, 8.1.1.5.1, 8.1.1.5.2, 8.1.1.5.3, 8.1.1.5.4, 8.1.1.5.5, 8.1.1.5.6, 8.1.1.5.7,
8.1.1.5.8, 8.1.1.5.9, 8.1.1.5.10, 8.1.1.5.11, 8.1.1.5.12, 8.1.1.5.13, 8.1.1.5.14,
8.1.1.5.15, 8.1.1.5.15.1, 8.1.1.5.15.2, 8.1.1.5.15.3, 8.1.1.5.16, 8.1.1.5.17,
10.2.49.8.1, 10.2.49.8.2 (new), 10.2.49.8.3 (new), 10.2.49.8.2, 10.2.49.8.3,
10.2.49.8.4, 10.2.49.8.5, 10.2.49.8.6, 10.2.49.8.7, 10.2.49.8.8, 10.2.49.8.9,
10.2.49.8.10, 10.2.49.8.11, 10.2.49.8.12, 10.2.49.8.13, 10.2.49.8.14,
10.2.49.8.14.1, 10.2.49.8.14.2, 10.2.49.8.14.3, 10.2.49.8.14.4, 10.2.49.8.15,
10.2.49.8.16, 10.2.49.8.16.1, 10.2.49.8.16.2, 10.2.49.8.16.3, 10.2.49.8.17,
10.2.49.8.18,
10.2.63, 10.3.3.41, 10.3.6.26, 10.3.6.69, 10.3.8.11, 10.3.8.11a (new), 10.3.8.12,
10.3.8.14, 10.3.8.17 (new), 10.3.8.17a (new),
11.2, 11.3.3, 11.3.8, 13.4.17

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other

Sections have been reordered by changing the number for each section. This is to be

comments: able to see changes compared to original text in the CR. However, this must be handled differently when implementing the CR.


help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.1.1 Broadcast of system information

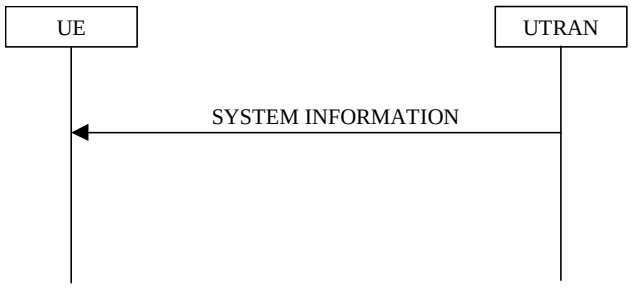


Figure 4: Broadcast of system information

8.1.1.1 General

The purpose of this procedure is to broadcast system information from the UTRAN to UEs in a cell.

8.1.1.1.1 System information structure

The system information elements are broadcast in *system information blocks*. A system information block groups together system information elements of the same nature. Different system information blocks may have different characteristics, e.g. regarding their repetition rate and the requirements on UEs to re-read the system information blocks.

The system information is organised as a tree. A *master information block* gives references and scheduling information to a number of system information blocks in a cell., ~~including scheduling information for those system information blocks.~~ The system information blocks contain the actual system information ~~and optionally references to other system information blocks including scheduling information for those system information blocks. The referenced system information blocks must have the same area scope and use the same update mechanism as the parent system information block.~~ The master information block may optionally also contain reference and scheduling information to one or two *scheduling blocks*, which gives references and scheduling information for additional system information blocks. Scheduling information for a system information block may only be included in either the master information block or one of the scheduling blocks

For all system information blocks except type 16, the content is the same in each occurance for system information blocks using value tag. System information block 16~~Some system information blocks~~ may occur more than once with different content. In this case scheduling information is provided for each such occurrence of the system information block. ~~This option is only allowed for system information block type 16.~~ System information blocks that do not use value tag may have different content for each occurance.

~~Figure 5 illustrates~~ an example of ~~the relationship between the master information block, a scheduling block and the system information blocks in a cell.~~

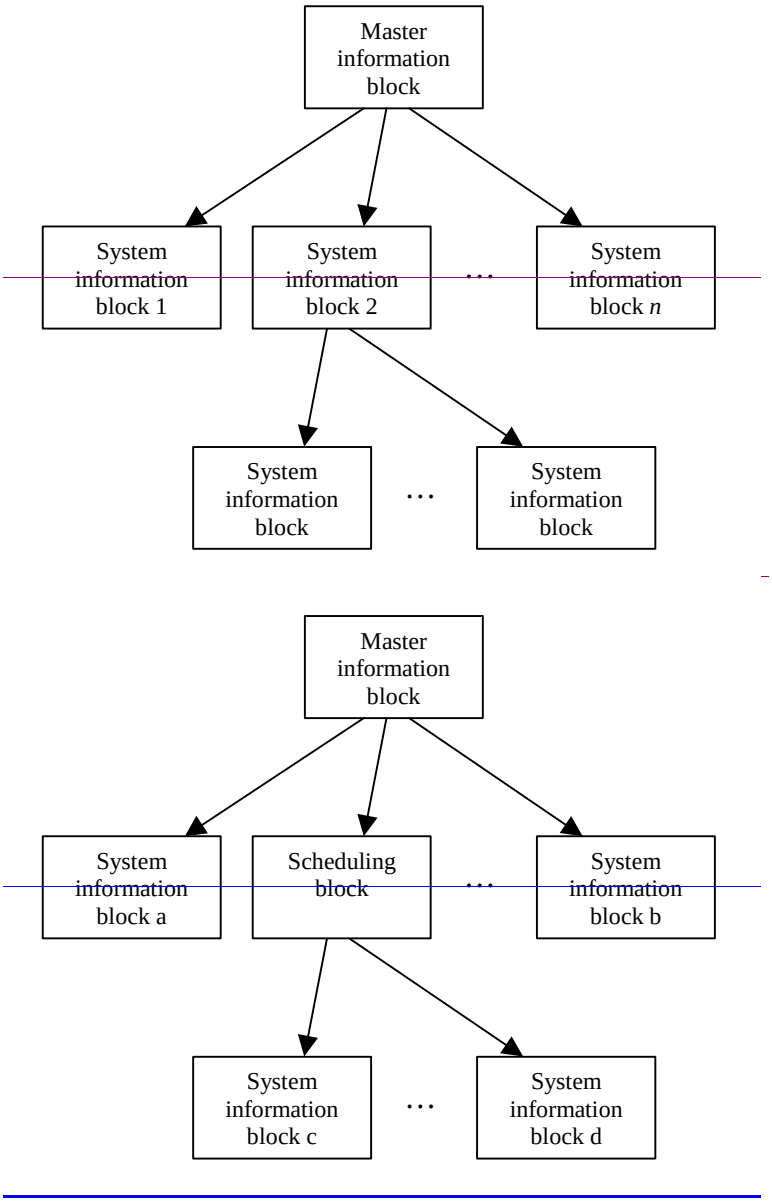


Figure 5: The overall structure of system information

8.1.1.1.2 System information blocks

Table 8.1.1 specifies all system information blocks and their characteristics.

The *area scope column* in table 8.1.1 specifies the area where a system information blocks value tag is valid. If the area scope is *cell*, the UE shall consider the system information block to be valid only in the cell in which it was read. If system information blocks have been previously stored for this cell, the UE shall check whether the value tag for the system information block in the entered cell is different compared to the stored value tag. If the area scope is *PLMN*, the UE shall check the value tag for the system information block when a new cell is selected. If the value tag for the system information block in the new cell is different compared to the value tag for the system information block stored in the UE, the UE shall re-read the system information block.

For System information blocks type 16, ~~of~~ which may have ~~there are~~ multiple occurances, each occurrences ~~each~~ have their own independent value tag. The UE- shall re-read a particular occurrence if the value tag of this occurrence has changed compared to that stored in the UE.

The *UE mode/state column when block is valid* in table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block shall be regarded as ~~are~~ valid by the UE. In other words, the indicated system information block becomes invalid upon change to a mode/state that is not included in this column.

The *UE mode/state column when block is read* in table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block shall be read by the UE.

NOTE 1 There is a number of system information blocks that include the same IEs while the UE mode/state in which the information is valid differs. This approach is intended to allows the use of different IE values in different UE mode/states.

NOTE 2 The requirements concerning when a UE shall read system information blocks are specified indirectly; these requirements may be derived from the procedure specifications that specify which IEs are required in the different UE modes/states in conjunction with the different performance requirements that are specified.

~~FDD UEs fulfilling the *Additional requirements column* shall use the IEs given by the system information block when in state CELL_DCH.~~

~~The *Transport channel* column in table 8.1.1 specifies whether the system information block is broadcast on a BCH or a FACH transport channel.~~

The *Scheduling information* column in table 8.1.1 specifies the position and repetition period for the SIB.

The *modification of system information* column in table 8.1.1 specifies the update mechanisms applicable for a certain system information block. For system information blocks with a value tag, the UE shall update the information according to subclause 8.1.1.74.1 or 8.1.1.74.23. For system information blocks with an expiration timer, the UE shall when the timer expires perform update the information according to subclause 8.1.1.74.42.

Table 8.1.1: Specification of system information block characteristics

System information block	Area scope	UE mode/state when block is valid	~~Transport channel~~UE mode/state when block is read	Scheduling information	Modification of system information	Additional ~~requirements~~Comment
Master information block	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	SIB_POS = 0 SIB_REP = 8 (FDD) SIB_REP = 8, 16, 32 (TDD) SIB_OFF=2	Value tag	
		~~CELL_FACH~~	~~FACH~~	~~Scheduling not applicable~~	~~Value tag~~	
Scheduling block 1	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	~~BCH~~ Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information" in MIB	Value tag	
Scheduling block 2	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	~~BCH~~ Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information" in MIB	Value tag	
System information block type 1	PLMN	Idle mode CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	~~BCH~~Idle	Specified by the IE "Scheduling information"	Value tag	
System information block type 2	~~PLMN~~Cell	~~CELL_FACH, CELL_PCH,~~ URA_PCH	~~BCH~~URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 3	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	~~BCH~~Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 4	Cell	CELL_FACH, CELL_PCH, URA_PCH	~~BCH~~ CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If System information block type 4 is not broadcast in a cell, the connected mode UE shall read System information block type 3
System information block type 5	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	~~BCH~~ Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 6	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	~~BCH~~ CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Value tag	If system information block type 6 is not broadcast in a cell, the connected mode UE shall read System information block type 5. If some of the optional IEs are not included in System information block type 6, the UE shall read the corresponding IEs in System information block type 5

System information block type 7	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	~~BCH~~ Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 8	Cell	CELL_FACH, CELL_PCH, URA_PCH	~~BCH~~ CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 9	Cell	CELL_FACH, CELL_PCH, URA_PCH~~Connected mode~~	~~BCH~~ CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 10	Cell	CELL_DCH	~~FACH~~ CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	~~This system information block shall only be acquired by UEs with support for simultaneous reception of one SCCPCH and one DPCH.~~ ~~If the system information block is not broadcast in a cell, the DRAC procedures do not apply in this cell.~~ ~~This system information block is used in FDD mode only.~~
System information block type 11	Cell	Idle mode (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH)	~~BCH~~ Idle mode (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	~~This system information block is used in FDD mode only.~~
System information block type 12	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	~~BCH~~ CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If some of the optional IEs are not included in System information block type 12, the UE shall read the corresponding IEs in System information block type 11. ~~This system information block is used in FDD mode only.~~
System information block type 13	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.3	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	

System information block type 13.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	
System information block type 14	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	~~BCH~~ Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	This system information block is used in TDD mode only.
System information block type 15	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.3	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH~~BCH~~	Specified by the IE "Scheduling information"	Value tag	
System information block type 16	PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	~~BCH~~ Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences
System information block type 17	Cell	CELL_FACH, CELL_PCH, URA_PCH , CELL_DCH	~~BCH~~ CELL_FACH, CELL_PCH, URA_PCH , CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	This system information block is used in TDD mode only.

The UE shall acquire all system information blocks except system information block type 10 on BCH. System information block type 10 shall be acquired on the FACH and only by UEs with support for simultaneous reception of one SCCPCH and one DPCH. If system information block type 10 is not broadcast in a cell, the DRAC procedures do not apply in this cell. This system information block is used in FDD mode only.

8.1.1.1.3 Segmentation and concatenation of system information blocks

A generic SYSTEM INFORMATION message is used to convey the system information blocks on the BCCH. A given BCCH may be mapped onto either a BCH- or a FACH transport channel according to ~~table~~ 8.1.1.1.2. The size of the SYSTEM INFORMATION message shall fit the size of a BCH- or a FACH transport block.

The RRC layer in UTRAN performs segmentation and concatenation of encoded system information blocks. If the encoded system information block is larger than the size of a SYSTEM INFORMATION message, it will be segmented and transmitted in several messages. If the encoded system information block is smaller than a SYSTEM INFORMATION message, UTRAN may concatenate (parts of) several system information blocks, or the first segment or the last segment into the same message as specified in the remainder of this clause.

Four different segment types are defined:

- First segment;
- Subsequent segment;

- Last segment;
- Complete.

Each of the types - *First*, *Subsequent* and *Last segment* - are used to transfer segments of a master information block, scheduling block or a system information block. The segment type, *Complete*, is used to transfer a complete master information block, complete scheduling block or a complete system information block.

Each segment consists of a header and a data field. The data field carries the encoded system information elements. The header contains the following parameters:

- The number of segments in the system information block (SEG_COUNT). This parameter is only included in the header if the segment type is "First segment".
- SIB type. The SIB type uniquely identifies the master information block, scheduling block or a system information block.
- Segment index. This parameter is only included in the header if the segment type is "Subsequent segment" or "Last segment".

UTRAN may combine one or several segments of variable length in the same SYSTEM INFORMATION message. The following combinations are allowed:

1. No segment;
2. First segment;
3. Subsequent segment;
4. Last segment;
5. Last segment + First segment;
6. Last segment + one or several Complete;
7. Last segment + one or several Complete + First segment;
8. One or several Complete;
9. One or several Complete + First segment.~~.~~

The "No segment" combination is used when there is no master information block, scheduling block or system information block scheduled for a specific BCH transport block.

UEs are not required to support the reception of multiple occurrences of a system information block type within one SYSTEM INFORMATION message.

NOTE: Since the SIB type is the same for each occurrence of the system information block, the UE does not know the order in which the occurrences, scheduled for this SYSTEM INFORMATION message, appear. Therefore, the UE is unable to determine which scheduling information, e.g., value tag relates to which occurrence of the system information block.

8.1.1.1.4 Re-assembly of segments

The RRC layer in the UE shall perform re-assembly of segments. All segments belonging to the same master information block, scheduling block or system information block shall be assembled in ascending order with respect to the segment index. When all segments of the master information block, scheduling block or a system information block have been received, the UE shall perform decoding of the complete master information block, scheduling block or system information block. For system information type 16 ~~blocks~~ which may have multiple occurrences, each occurrence shall be re-assembled independently.

The UE shall discard system information blocks of which segments were missing, of which segments were received out of sequence and/or for which duplicate segments were received.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is larger than the number of segments stated in IE "SEG_COUNT" in the scheduling information for that scheduling block or system information block,

the UE may

- read all the segments to create a system information block
- store the content of the system information block with a value tag set to the value NULL, and;
- consider the content of the scheduling block or system information block as valid until it receives the same type of scheduling block or system information block in a position according to its scheduling information or at most for 6 hours after reception.

the UE shall:

- read scheduling information for that scheduling block or system information block

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is larger than the number of segments stated in IE "SEG_COUNT" in the First segment, the UE shall discard all segments for that master information block, scheduling block or system information block and shall re-read the scheduling information for that system information block. The UE shall then re-read all segments for that system information block.

8.1.1.1.5 Scheduling of system information

Scheduling of system information blocks is performed by the RRC layer in UTRAN. If segmentation is used, it should be possible to schedule each segment separately.

To allow the mixing of system information blocks with short repetition period and system information blocks with segmentation over many frames, UTRAN may multiplex segments from different system information blocks. Multiplexing and de-multiplexing is performed by the RRC layer.

The scheduling of each system information block broadcast on a BCH transport channel is defined by the following parameters:

- the number of segments (SEG_COUNT);
- the repetition period (SIB_REP). The same value applies to all segments;
- the position (phase) of the first segment within one cycle of the Cell System Frame Number (SIB_POS). Since system information blocks are repeated with period SIB_REP, the value of SIB_POS must be less than SIB_REP for all segments;
- the offset of the subsequent segments in ascending index order (SIB_OFF(i), i=1, 2, … SEG_COUNT-1) The position of the subsequent segments is calculated using the following: SIB_POS(i) = SIB_POS(i-1) + SIB_OFF(i).

The scheduling is based on the Cell System Frame Number (SFN). The frame at which a particular segment, *i*, of a system information block occurs is defined as follows:

$$SFN \bmod SIB\_REP = SIB\_POS(i)$$

In FDD and TDD the scheduling of the master information block is fixed as defined in Table 8.1.1. For TDD, ~~the~~ UTRAN may apply one of the ~~four~~ values allowed for the master information block's repetition period. The value that UTRAN is using is not signalled; UEs have to determine it by trial and error.

8.1.1.2 Initiation

The system information is continuously repeated on a regular basis in accordance with the scheduling defined for each system information block.

~~The UTRAN may send information blocks other than those scheduled.~~

8.1.1.3 Reception of SYSTEM INFORMATION messages by the UE

The UE shall read SYSTEM INFORMATION messages broadcast on a BCH transport channel in idle mode and in the connected mode ~~as well as in~~ states CELL_FACH, CELL_PCH, URA_PCH and CELL_DCH (TDD only). ~~Further, the UE shall read SYSTEM INFORMATION messages broadcast on a FACH transport channel when in CELL_FACH state.~~ In addition, UEs which support simultaneous reception of one SCCPCH and one DPCH shall read system information on a FACH transport channel when in CELL_DCH state.

In ~~I~~idle mode and connected mode ~~UEs may acquire~~ different combinations of system information blocks are valid. The UE shall acquire the ~~Before each acquisition, the UE should identify which~~ system information blocks that are needed according to table 8.1.1.

The UE may store system information blocks with cell or PLMN area scope (including their value tag) for different cells and different PLMNs, to be used if the UE returns to these cells.

~~The UE shall consider the system information blocks valid for a period of 6 hours from reception. Moreover, t~~The UE shall consider all stored system information blocks as invalid after it has been switched off.

When selecting a new cell within the currently used PLMN, the UE shall consider all current system information blocks with area scope cell to be invalid. If the UE has stored valid system information blocks for the newly selected cell, the UE may set those as current system information blocks.

After selecting a new PLMN, the UE shall consider all current system information blocks to be invalid. If the UE has previously stored valid system information blocks for the selected cell of the new PLMN, the UE may set those as current system information blocks. Upon selection of a new PLMN the UE shall store all information elements specified within variable SELECTED_PLMN for the new PLMN within this variable.

8.1.1.~~3.5~~1 Actions upon ~~R~~reception of ~~SYSTEM INFORMATION messages broadcast on a BCH transport channel~~the master information block and scheduling blocks

When selecting a new cell, the UE shall read the master information block. The UE may use the pre-defined scheduling information to locate the master information block in the cell.

Upon reception of the master information block, the UE shall:

- If the "PLMN type" in the variable SELECTED_PLMN has the value "GSM-MAP" and the IE "PLMN Type" has the value "GSM-MAP" or "GSM-MAP and ANSI-41", the UE shall

  - check the IE "PLMN identity" in the master information block and verify that it is the selected PLMN, stored as "PLMN identity" in the variable SELECTED_PLMN.

- If the "PLMN type" in the variable SELECTED_PLMN has the value "ANSI-41 "and the IE "PLMN Type" has the value "ANSI-41" or "GSM-MAP and ANSI-41", the UE shall

  - store the ANSI-41 Information elements contained in the master information block and perform initial process for ANSI-41.

- Compare the value tag in the master information block with the value tag stored for this cell and this PLMN in the variable VALUE_TAG.

- If the value tags differ, or if no IEs for the master information block are stored the UE shall:

  - Store the value tag into the variable VALUE_TAG for the master information block;~~.~~

  - Read and store scheduling information included in the master information block;

  - ~~If reference and scheduling information for scheduling blocks is included in the master information block, UE shall read the scheduling block.~~

- If the value tags are the same the UE may use stored system information blocks and scheduling blocks using value tag that were stored in this cell and this PLMN as valid system information.

~~-~~ For all system information blocks or scheduling blocks, that is supported by the UE, referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

- For all system information blocks with area scope PLMN that use value tags:
  - , Compare ~~check~~ the value tag read in scheduling information for that system information block with ~~and store it within~~ the value stored within the variable VALUE_TAG for that system information block;~~.~~
  - ~~If, for any of these system information blocks,~~ the value tags differ~~s~~, ~~from the value of the variable VALUE_TAG for that system information block~~ or if no IEs for the corresponding system information block are stored, the UE shall:
    - ~~store~~ the value tag read in scheduling information for that system information block into the variable VALUE_TAG;
    - read and store the IEs of that system information block.
  - If the value tags are the same the UE may use stored system information blocks using value tag that were stored in this PLMN as valid system information.
- For all system information blocks or scheduling blocks with area scope cell that use value tags:
  - , ~~check~~Compare the value tag read in scheduling information for that system information block or scheduling block with the value stored within the ~~and store it within~~ variable VALUE_TAG for that system information block or scheduling block,
  - ~~.~~ If~~, for any of these system information blocks,~~ the value tags differ~~s~~, ~~from the value of the variable VALUE_TAG for that system information block~~ or if no IEs for the corresponding system information block or scheduling block ~~have been~~are stored, the UE shall~~:~~
    - store the value tag read in scheduling information for that system information block or scheduling block into the variable VALUE_TAG;
    - read and store the IEs of that system information block or scheduling block.
  - If the value tags are the same the UE may use stored system information blocks using value tag that were stored in this cell and this PLMN as valid system information.
- For system information blocks of type 16 which may have multiple occurrences:
  - , ~~check~~Compare ~~and store~~ the value tag and the configuration identity for ~~each~~ the occurrence of the system information block read in scheduling information ~~s to be used by the UE~~ with the value tag and configuration identity stored within the variable VALUE_TAG.~~:~~
  - If~~, for any occurrence of the system information blocks,~~ the value tags ~~is~~ differ~~ent~~, ~~from the value of the variable VALUE_TAG for the same occurrence of the system information block,~~ or if no IEs from the ~~corresponding~~ occurrence with that configuration identity of the system information block ~~have~~ are ~~been~~ stored, the UE shall~~:~~
    - store the value tag read in scheduling information for that system information block and the occurance with that configuration identity into the variable VALUE_TAG;
    - read and store the IEs of that system information block.
  - If the value tags and the configuration identity are the same the UE may use stored occurances of system information blocks using value tag and configuration identity that were stored in this cell and this PLMN as valid system information.
  - ~~Read and store the IEs of all system information blocks with area scope *cell* that do not use value tags~~

~~The UE may use the scheduling information included within the master~~ information bock ~~and~~ the scheduling ~~other system information blocks to locate each system information block to be acquired. However,~~ To enable future ~~introduction of new system information blocks, the UE shall also be able to receive system information blocks other than the ones indicated within the scheduling information.~~ UE may ignore contents of such system information block.

~~Upon reception of a system information block, the UE shall perform the actions specified in subclause 8.1.1.5.~~

For all system information blocks or scheduling blocks, not supported by the UE, referenced in the master information block or the scheduling blocks, the UE may

- skip reading this system information block;
- skip monitoring changes to this system information block

If the UE

- receives a scheduling block at a position different from its position according to the scheduling information for the scheduling block, or;
- receives a scheduling block for which scheduling information has not been received;

the UE may

- store the content of the scheduling block with a value tag set to the value NULL, and;
- consider the content of the scheduling block as valid until it receives the same type of scheduling block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE does not find a scheduling block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall read the scheduling information for this scheduling block.

If the UE does not find the master information block in a position fulfilling (SFN mod (MIB_REP*4) = 0), (but a transport block with correct CRC was found at that position), the UE shall consider the master information block as not found.

If the master information block is not found according to the above, the UE shall consider the cell to be barred according to [4]. The UE shall consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

8.1.1.~~43.2~~ Reception of SYSTEM INFORMATION messages broadcast on a FACH transport channel

~~Some s~~System information ~~blocks~~ block type 10 may be broadcast on FACH, as specified in ~~table~~ 8.1.1.1.2. ~~In case there is more than one FACH used in a cell, system information blocks broadcast on FACH and intended to reach all UEs in CELL_FACH state, e.g., the master information block, should be broadcast on all FACHs. The master information block may not be broadcast regularly on FACH. The master information block on FACH indicates the changes of system information block contents broadcast on BCH.~~

When reading system information blocks on FACH, the UE shall perform the actions as defined in subclause 8.1.1.6~~5~~.

8.1.1.74 Modification of system information

~~Different rules apply for the updating of different types of system information blocks. If the system information block has a value tag in the master information block or higher level system information~~a scheduling block, UTRAN shall ~~indicate when any of the information elements are modified by changing the value of the corresponding value tag. In addition to this, there are system information block types that contain information elements which are changing too frequently to be indicated by change in value tag. This type of system information blocks is not linked to a value tag in the master information block or higher-level system information block.~~ The UE shall consider all stored system information blocks as invalid after it has been switched off. For system information ~~blocks~~ block type 16 that may have multiple occurrences, the UE shall handle each occurrence independently as specified in the previous; that is each occurrence is handled as a separate system information block.

NOTE: It should be noted that for the proper operation of the BCCH Modification Information sent on a PCH, the System Information should not be changed more frequently than can be accommodated by mobile stations operating at the maximum DRX cycle length supported by the UTRAN.

8.1.1.74.1 Modification of system information blocks using a value tag

~~When system information is modified, UTRAN shall perform the following actions to indicate the change to the UEs:~~

- ~~update the actual system information in the corresponding system information block;~~

- ~~if the updated system information block is linked to a higher level system informationa scheduling block, update the higher level system informationscheduling block with the value tag of the modified system information block;~~

- ~~update the master information block with the value tag of the modified system information block or higher level system informationscheduling block and change the value tag of the master information block;~~

- ~~start to send the first new master information block on the BCCH mapped on BCH instead of the old master information block and then the updated system information block on the BCCH instead of the old system information block;~~

- ~~send the new master information block on the BCCH mapped on FACH on all FACHs in order to reach all UEs in state CELL_FACH. UTRAN may repeat the new master information block on all FACHs to increase the probability of proper reception in all UEs needing the information;~~

- ~~send the PAGING TYPE 1 message on the PCCH in order to reach idle mode UEs as well as connected mode UEs in state CELL_PCH and URA_PCH. In the IE "BCCH Modification Information" in the PAGING TYPE 1 message, UTRAN shall indicate the new value tag for the master information block. The PAGING TYPE 1 message should be sent in all paging occasions;~~

~~NOTE: It should be noted that for the proper operation of the BCCH Modification Information sent on a PCH, the System Information should not be changed more frequently than can be accommodated by mobile stations operating at the maximum DRX cycle length supported by the UTRAN.~~

Upon modifications of system information blocks using value tags, UTRAN should notify the new value tag for the master information block in the the IE “BCCH modification info”, transmitted in the following way:

- To reach UEs in idle mode, CELL_PCH state and URA_PCH state, the IE “BCCH modification info” is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;

- To reach UEs in CELL_FACH state, the IE “BCCH modification info” is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message ~~the~~ containing the IE “BCCH modification info” containing the IE “MIB value tag” but not containing the IE "BCCH modification time” ~~PAGING TYPE 1 message~~, the UE shall perform actions as specified in 8.1.1.7.3.

If the IE "BCCH modification time" is included the UE shall perform actions as specified in 8.1.1.7.2.

8.1.1.7.3 Actions upon system information change

The UE shall:

- Compare the value of IE "MIB value tag" in the IE "BCCH modification info" with the value tag stored for the master information block in variable VALUE_TAG.

- If the value tags differ the UE shall:

  - read the master information block on BCH

  - If the value tag of the master information block in the system information is the same as the value in IE "MIB value tag" in "BCCH modification info" the UE shall:

    - perform actions as specified in 8.1.1.5.

  - If the value tag of the master information block in the system information is the same as the value tag stored in the variable VALUE_TAG, the UE shall:

    - for the next occurrence of the master information block, perform actions as specified in 8.1.1.7.3 again.

  - If the value tag of the master information block in the system information is different from the value tag stored in the variable VALUE_TAG, and is different from the value in IE "MIB value tag" in "BCCH modification info", the UE shall:

    - perform actions as specified in 8.1.1.5.

- If (VTCI-VTMIB) mod 8 < 4, where VTCI is the value tag in the IE "MIB value tag" in "BCCH modification info" and VTMIB is the value tag of the master information block in the system information, the UE shall:

  - for the next occurrence of the master information block, perform actions as specified in 8.1.1.7.3 again.

- check the value tag of the master information block indicated in the IE "BCCH Modification information". If the value tag is different from the value stored in the variable VALUE_TAG for the master information block, the UE shall read the new master information.

Upon reception of the new master information block (received on the BCCH mapped on BCH or FACH), the UE shall:

- store the new value tag sent in the variable VALUE_TAG for the master information block;

- check the value tag for all system information blocks that are used by the UE. The UE shall read each system information block, for which the value tag is different from the value stored in the variable VALUE_TAG for that system information block. For system information blocks that have multiple occurrences, the UE shall handle each occurrence independently as specified in the previous; that is each occurrence is handled as a separate system information block. On reception of a modified system information block, the UE shall perform the actions specified in subclause 8.1.1.5.

8.1.1.4.2 Modification of system information without value tag

When the UE has acquired a system information block not linked to a value tag, an expiration timer shall be started using a value equal to the repetition period (SIB_REP) as defined in table 8.1.1 for that system information block. When the timer expires, the information carried in the system information block is considered to be invalid and the UE shall re-acquire the system information block before the system information elements can be used. On reception of a modified system information block, the UE shall perform the actions specified in subclause 8.1.1.5. The UE may postpone reading such system information block until information elements included in the block are needed by UE.

8.1.1.74.23 Time criticalSynchronised modification of system information blocks

For modification of some system information elements, e.g. reconfiguration of the channels, it is important for the UE to know exactly when a change occurs. In such cases, the UTRAN should notify the SFN when the change will occur as well as the new value tag for the master information block in the IE "BCCH modification info"perform the following actions to indicate the change to the UEs transmitted in the following way:

- To reach UEs in idle mode, CELL_PCH state and URA_PCH state, the IE “BCCH modification info” is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;

- To reach UEs in CELL_FACH state, the IE “BCCH modification info” is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

send the PAGING TYPE 1 message on the PCCH in order to reach idle mode UEs as well as connected mode UEs in state CELL_PCH and URA_PCH. In the IE "BCCH Modification Information", UTRAN shall indicate the SFN when the change will occur and the new value tag that will apply for the master information block after the change has occurred. The PAGING TYPE 1 message shall be sent in all paging occasions.

- send the message SYSTEM INFORMATION CHANGE INDICATION on the BCCH mapped on FACH on all FACHs in order to reach all UEs in state CELL_FACH. In the IE "BCCH Modification Information", UTRAN shall indicate the SFN when the change will occur and the new value tag that will apply for the master information block after the change has occurred. UTRAN may repeat the SYSTEM INFORMATION CHANGE INDICATION on all FACHs to increase the probability of proper reception in all UEs needing the information.

- update the actual system information in the corresponding system information block.

- if the updated system information block is linked to a higher level system informationscheduling block, update the higher level system informationscheduling block with the value tag of the modified system information block.

- update the master information block with the value tag of the modified system information block or higher level system informationscheduling block and change the value tag of the master information block.

- at the indicated SFN, send the new master information block on the BCCH mapped on BCH instead of the old master information block followed by the updated system information block on the BCCH instead of the old system information block.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" and containing the "IE BCCH modification time"the PAGING TYPE 1 or SYSTEM INFORMATION CHANGE INDICATION message, the UE shall:

- wait until the startingat the time, indicated in the IE "BCCH Modification Information",. When the starting time occurs, the UE shall read the new master information block perform the actions as specified in subclause 8.1.1.7.3.

Upon reception of the new master information block, the UE shall:

- store the new value tag of the master information block;

- check the value tag for all system information blocks that are used by the UE. The UE shall read each system information block, for which the value tag is different from the value stored in the variable VALUE_TAG for that system information block. Upon reception of a modified system information block, the UE shall perform the actions specified in subclause 8.1.1.5.

If the UE cannot find the master information block, it can assume that a physical reconfiguration has occurred and perform a new cell search.

8.1.1.7.4 Actions upon expiry of a system information expiry timer

When the expiry timer of a system information block not using a value tag expires

the UE shall:

- consider the content of the system information block unvalid;

- re-acquire the system information block again before the content can be used

the UE may:

- pospone reading the system information block until the content is needed.

8.1.1.65 Actions upon reception of system information blocks

The UE may use the scheduling information included within the master information block and the scheduling blocks to locate each system information block to be acquired.

The UE should only expect one occurrence of the scheduling information for a system information block in the master information block and any of the scheduling blocks. However, to enable future introduction of new system information blocks, the UE shall also be able to receive system information blocks other than the ones indicated within the scheduling information. UE may ignore contents of such system information block.

If the UE

- receives a system information block in a position according to the scheduling information for the system information block, and;

- this system information block uses a value tag according to the system information block type;

the UE shall

- store the content of the system information block together with the value of its value tag in the scheduling information for the system information block, and;

- consider the content of the system information block valid until, if used, the value tag in the scheduling information for the system information block is changed or at most for 6 hours after reception.

If the UE

- receives a system information block in a position according to the scheduling information for the system information block, and;

- this system information block does not use a value tag according to the system information block type;

the UE shall

- store the content of the system information block, and;

- start an expiration timer using a value as defined in table 8.1.1 for that system information block type, and;

- consider the content of the system information block valid until, the expiration timer expires.

If the UE

- receives a system information block at a position different from its position according to the scheduling information for the system information block, or;

- receives a system information block for which scheduling information has not been received, and;

- this system information block uses a value tag according to the system information block type;

the UE may

- store the content of the system information block with a value tag set to the value NULL, and;

- consider the content of the system information block as valid until it receives the same type of system information block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE does not find a system information block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall read the scheduling information for this system information block.

The UE shall act upon all received information elements as specified in 8.6 unless specified otherwise in the following sections.

8.1.1.6~~5~~.1 System Information Block type 1

If in idle mode, the UE should store all relevant IEs included in this system information block if the "PLMN Type" in the variable SELECTED_PLMN has the value "GSM-MAP" and the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41". The UE shall also:

- forward the content of the IE "~~NAS system info~~CN domain specific NAS system information" to the non-access stratum entity indicated by the IE "CN domain identity";

- use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions and Page indicator as specified in TS 25.304.

- ~~store the timer and constant values included in the IE "UE Timers and constant used in CELL_DCH". The values shall be used by the UE in state CELL_DCH.~~

- use the values in the IE "UE Timers and constants in idle mode" for the relevant timers and counters

If in connected mode the UE shall not use the values of the IEs in this system information block (except for the timers and constant values given by ~~the IE "UE Timers and constant in CELL_DCH"~~the IE “UE timers and constants in connected mode”).

If in idle mode and system information block type 1 is not scheduled on BCH, and system information block type 13 is not scheduled on BCH the UE shall:

- consider the cell to be barred according to [4]. The UE shall consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

8.1.1.65.2 System Information Block type 2

If in connected mode the UE should store all relevant IEs included in this system information block. The UE shall:

- ~~if in state CELL_FACH or CELL_PCH, start to perform periodical cell updates using the information in the IE "UE timers and constants";~~

- if in state URA_PCH, start to perform ~~periodical~~ URA updates using the information in the IE~~s~~ "URA identity" ~~and "UE timers and constants"~~.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

8.1.1.65.3 System Information Block type 3

The UE should store all relevant IEs included in this system information block. The UE shall:

- ~~if IEs containing scheduling information for other system information blocks are included, act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.~~

- if in connected mode, and system information block 4 is indicated as used in the cell, UE shall read and act on information sent in that block.

If in idle mode and system information block type 3 is not scheduled on BCH the UE shall:

- consider the cell to be barred according to [4]. The UE shall consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

If in connected mode and system information block type 3 is not scheduled on BCH,and system information block type 4 is not scheduled on BCH the UE shall:

- consider the cell to be barred according to [4]. The UE shall consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

8.1.1.65.4 System Information Block type 4

If in connected mode, the UE should store all relevant IEs included in this system information block. ~~The UE shall:~~

- ~~if IEs containing scheduling information for other system information blocks are included, act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.~~

If in idle mode, the UE shall not use the values of the IEs included in this system information block.

8.1.1.65.5 System Information Block type 5

The UE should store all relevant IEs included in this system information block. The UE shall:

- ~~if IEs containing scheduling information for other system information blocks are included, act on those IEs in a similar manner as specified for the scheduling information contained within the master information block;~~

- if in connected mode, and system information block 6 is indicated as used in the cell, UE shall read and act on information sent in that block.

- replace the TFS of the transport channel with the identical transport channel identity with the one stored in the UE if any;

- let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL_FACH state;

- start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;

- select a Secondary CCPCH as specified in subclause 8.6, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL_PCH or URA_PCH state;

- start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL_PCH or URA_PCH state;

- start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL_FACH state;

- in TDD: use the IE "Midamble configuration" for receiver configuration;

- in TDD: use the IEs "Primary CCPCH Tx Power", "PRACH Constant value", "DPCH Constant value" and "PUSCH Constant value" to calculate PRACH/DPCH/PUSCH transmit power for TDD uplink open loop power control as defined in 8.5.8;

- in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode and system information block type 5 is not scheduled on BCH or system information block type 5 is scheduled but AICH info or PICH info is not present, the UE shall:

- consider the cell to be barred according to [4]. The UE shall consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

If in connected mode and system information block type 5 is not scheduled on BCH, and system information block type 6 is not scheduled on BCH, or any of system information block type 5 or type 6 is scheduled but AICH info or PICH info is not present, the UE shall:

- consider the cell to be barred according to [4]. The UE shall consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

8.1.1.6~~5~~.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- ~~if IEs containing scheduling information for other system information blocks are included, act on those IEs in a similar manner as specified for the scheduling information contained within the master information block;~~

- replace the TFS of the transport channel with the identical transport channel identity with the one stored in the UE if any;

- let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in system information block type 5 and use that information to configure the PRACH;

- start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in system information block type 5 and use that information (FDD only);

- select a Secondary CCPCH as specified in subclause 8.6, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL_PCH or URA_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in system information block type 5 and use that information;

- start to monitor its paging occasions on the selected PICH if the UE is in CELL_PCH or URA_PCH state;

- start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in system information block type 5 and use that information;

- in TDD: use the IEs "Primary CCPCH Tx Power", "PRACH Constant value", "DPCH Constant value" and "PUSCH Constant value" to calculate PRACH/DPCH/PUSCH transmit power for TDD uplink open loop power control as defined in 8.5.8;

- in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

8.1.1.6~~5~~.7 System Information Block type 7

The UE should store all relevant IEs included in this system information block. The UE shall:

- start a timer set to the value given by the repetition period (SIB_REP) for that system information block.

If system information block type 7 is not scheduled on BCH the UE shall:

- consider the cell to be barred according to [4]. The UE shall consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

8.1.1.6~~5~~.8 System Information Block type 8

This system information block type is used only for FDD.

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

8.1.1.6~~5~~.9 System Information Block type 9

This system information block type is used only for FDD.

If in connected mode, the UE should store all relevant IEs included in the system information block. The UE shall:

- start a timer set to the value given by the repetition period (SIB_REP) for that system information block

If in idle mode, the UE shall not use the values of the IEs in this system information block.

8.1.1.6~~5~~.10 System Information Block type 10

This system information block type is used only for FDD.

If in state CELL_DCH, the UE should store all relevant IEs included in this system information block. The UE shall:

- start a timer set to the value given by the repetition period (SIB_REP) for that system information block;

- perform actions defined in subclause 14.6.

If in idle mode, state CELL_FACH, state CELL_PCH or state URA_PCH, the UE shall not use the values of the IEs in this system information block.

8.1.1.6~~5~~.11 System Information Block type 11

The UE should store all relevant IEs included in this system information block. The UE shall:

- ~~if IEs containing scheduling information for other system information blocks are included, act on those IEs in a similar manner as specified for the scheduling information contained within the master information block;~~

- if in connected mode, and system information block 12 is indicated as used in the cell, UE shall read and act on information sent in that block.

- for each measurement type start a measurement using the set of IEs specified for that measurement type;

- associate each measurement with the identity number given by the IE "Measurement identity number";
- if included, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL_DCH is entered;
- If IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Intra-frequency ~~Cell Information~~cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Intra-frequency ~~Cell Information~~cell info list", for that cell use the same parameter values as used for the preceding IE "Intra-frequency Cell Information";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-frequency ~~Cell Information~~cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-frequency ~~Cell Information~~cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-frequency Cell Information";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-system ~~Cell Information~~cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-system ~~Cell Information~~cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-system ~~Cell Information~~cell info list".

8.1.1.6~~5~~.12 System Information Block type 12

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- ~~if IEs containing scheduling information for other system information blocks are included, act on those IEs in a similar manner as specified for the scheduling information contained within the master information block;~~
- for each measurement type start (or continue) a measurement using the set of IEs specified for that measurement type;
- remove the intra-frequency cells given by the IE "Removed intra-frequency cells" from the list of intra-frequency cells specified in system information block type 11 and add the intra-frequency cells given by the IE "New intra-frequency cells" to the list of intra-frequency cells specified in system information block type 11;
- if any of the IEs "Intra-frequency measurement quantity", "Intra-frequency reporting quantity for RACH reporting", "Maximum number of reported cells on RACH" or "Reporting information for state CELL_DCH" are not included in the system information block, read the corresponding IE(s) in system information block type 11 and use that information for the intra-frequency measurement;
- if included in this system information block or in system information block type 11, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL_DCH is entered;
- remove the inter-frequency cells given by the IE "Removed inter-frequency cells" from the list of inter-frequency cells specified in system information block type 11 and add the inter-frequency cells given by the IE "New inter-frequency cells" to the list of inter-frequency cells specified in system information block type 11;
- if the IE "Inter-frequency measurement quantity" is not included in the system information block, read the corresponding IE in system information block type 11 and use that information for the inter-frequency measurement;
- remove the inter-system cells given by the IE "Removed inter-system cells" from the list of inter-system cells specified in system information block type 11 and add the inter-system cells given by the IE "New inter-system cells" to the list of inter-system cells specified in system information block type 11;

- if the IE "Inter-system measurement quantity" is not included in the system information block, read the corresponding IE in system information block type 11 and use that information for the inter-system measurement;

- if in state CELL_FACH, start traffic volume measurement reporting as specified in the IE "Traffic volume ~~measurement~~ reporting quantity";

- associate each measurement with the identity number given by the IE "Measurement identity number";

- If IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:

  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Intra-frequency ~~Cell Information~~cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;

  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Intra-frequency Cell Information", for that cell use the same parameter values as used for the preceding IE "Intra-frequency cell info list~~Cell Information~~";

  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-frequency cell info list~~Cell Information~~", use the default values specified for the IE "HCS neighbouring cell information" for that cell;

  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-frequency cell info list~~Cell Information~~", for that cell use the same parameter values as used for the preceding IE "Inter-frequency cell info list~~Cell Information~~";

  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-system cell info list~~Cell Information~~", use the default values specified for the IE "HCS neighbouring cell information" for that cell;

  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-system cell info list~~Cell Information~~", for that cell use the same parameter values as used for the preceding IE "Inter-system cell info list~~Cell Information~~".

If in idle mode, the UE shall not use the values of the IEs in this system information block.

8.1.1.6~~5~~.13 System Information Block type 13

If in idle or connected mode, the UE should store all relevant IEs included in this system information block except for the IEs "CN domain specific DRX cycle length coefficient", "UE timers and constants in idle mode" and "Capability update requirement" which shall be stored only in the idle mode case. The UE shall read SIB type 13 and the associated SIB type 13.1, 13.2, 13.3 and 13.4 only when the "PLMN Type" in the variable SELECTED_PLMN has the value "ANSI-41" and the IE "PLMN type" in the Master Information Block has the value "ANSI-41" or " GSM-MAP and ANSI-41". The UE shall also:

- forward the content of the IE "~~NAS(ANSI-41) system info~~CN domain specific NAS system information" to the non-access stratum entity indicated by the IE "CN domain identity";

- use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions and Page indicator as specified in TS 25.304.

8.1.1.6~~5~~.14 System Information Block type 14

This system information block type is used only for TDD.

The UE should store all relevant IEs included in this system information block. The UE shall:

- use the IE "~~UL Interference~~UL Timeslot Interference" to calculate PRACH, DPCH and PUSCH transmit power for TDD uplink open loop power control as defined in 8.5.8;

- start a timer set to the value given by the repetition period (SIB_REP) for that system information block.

8.1.1.65.15 System Information Block type 15

If the UE is in idle or connected mode, and supports GPS location services and/or OTDOA location services it should store all relevant IEs included in this system information block. The UE shall:

- ~~if IEs containing scheduling information for other system information blocks are included, on those in a similar manner as specified for the scheduling information contained within the master information block;~~

- if the IE "LCS Cipher GPS Data Indicator" is included, and the UE has a full or reduced complexity GPS receiver functionality (the UE will know that the broadcast GPS data is ciphered in accordance with the Data Assistance Ciphering Algorithm detailed in [18]):
  store the parameters contained within this IE (see 10.3.7.43 for details), and use them to decipher the broadcast LCS GPS information contained within the SIB types 15.1, 15.2 and 15.3;

- if the IE "LCS OTDOA assistance for SIB" is included:
  store the relevant information (refer to 10.3.7.61 for details).

8.1.1.65.15.1 System Information Block type 15.1

The UE should store all the relevant IEs included in this system information block . The UE shall:

- interpret a value of "1" of "UTRAN Time Flag" to mean that UTRAN timing information value (SFN) is present, and "0" to mean that only the Reference GPS TOW field value is provided;

- interpret a value of "1" of "NODE B Clock Drift Flag" to mean that NODE B Clock Drift information value is present, and "0" to mean that this IE value is not provided;

- if the IE "NODE B Clock Drift" is included:

  - use it as an estimate of the drift rate of the NODE B clock relative to GPS time;

- if the IE "NODE B Clock Drift" is not included:

  - assume the value 0;

- use IE "Reference Location" as a priori knowledge of the approximate location of the UE;

- if SFN is included:

  - use it as the relationship between GPS time and air-interface timing of the NODE B transmission in the serving cell;

- use "Reference GPS TOW" as GPS Time of Week which is the start of the frame with SFN=0;

- use "Status/Health" to indicate the status of the differential corrections;

- act on IE group "DGPS information" in a similar manner as specified in [13] except that the scale factors for PRC and RRC are different. In addition, the IE group DGPS information also include Delta PRC2 and Delta RRC2. Delta PRC2 is the difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2. Delta RRC2 is the difference in the pseudorange rate-of-change correction between the satellite's ephemeris identified by IODE and IODE-2. These two additional IEs can extend the life of the raw ephemeris data up to 6 hours.

8.1.1.65.15.2 System Information Block type 15.2

The UE should store all the relevant IEs included in this system information block . The UE shall:

- interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;

- interpret IE "SatID" as the satellite ID of the data from which this message was obtained;

- act on the rest of the IEs in a similar manner as specified in [12]. In addition, the UE can utilise these IEs for GPS time dissemination and sensitivity improvement.

8.1.1.65.15.3 System Information Block type 15.3

The UE should store all the relevant IEs included in this system information block . The UE shall:

- interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- interpret IE "SatMask" as the satellites that contain the pages being broadcast in this message;
- interpret IE "LSB TOW" as the least significant 8 bits of the TOW ([12]);
- interpret IE "SFIO" as the least significant bit of the SubFrame (SF) ID for which the following word 3 through word 10 data applies. Zero indicates subframe ID = 4, and One indicates Subframe ID = 5;
- interpret IE "Data ID" as the Data ID field contained in the indicated subframe, word 3, most significant 2 bits, as defined by [12];
- interpret IE "Page No" as the Page ID of the indicated subframe for which the following Word 3 through Word 10 data applies;
- act on the rest of the IEs (Word 3 to Word 10) in a similar manner as specified in [12], excluding non-information bits, "Data ID" and "SV ID" from Word 3 (16 bits left), 2 bit "t" from Word 10 (22 bits left). Word 4 through Word 9 have 24 bits left. In addition, the UE can utilise these IEs including non-information bits for GPS time dissemination and sensitivity improvement.

8.1.1.65.16 System Information Block type 16

For SIB 16 multiple occurrences may be used; one occurrence for each predefined configuration. To identify the different predefined configurations, the scheduling information for SIB type 16 includes IE "Predefined configuration identity and value tag" instead of the commonly used IE "PLMN ~~value~~ Value tag".

The UE should store all relevant IEs included in this system information block. The UE shall:

~~- if IEs containing scheduling information for other system information blocks are included:~~

~~- act on those in a similar manner as specified for the scheduling information contained within the master information block;~~

- compare for each predefined configuration the value tag of the stored predefined configuration, if any, with the preconfiguration value tag included in the IE "Predefined configuration identity and value tag" for the occurrence of the SIB with the same predefined configuration identity;
- in case the UE has no predefined configuration stored with the same identity or in case the predefined configuration value tag is different:
  - store the predefined configuration information together with its identity and value tag for later use e.g. during handover to UTRAN;
  - in case a predefined configuration with the same identity was stored:
    - overwrite this one with the new configuration read via system information for later use e.g. during handover to UTRAN.

The above handling applies regardless of whether the stored predefined configuration information has been obtained via UTRA or via another RAT.

The UE is not required to complete reading of all occurrences of system information block type 16 before initiating RRC connection establishment.

8.1.1.65.17 System Information Block type 17

This system information block type is used only for TDD.

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. This information shall become invalid after the time specified by the repetition period (SIB_REP) for this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

***** Next modified section *****

10.2.49.8 System Information Blocks

The IE "SIB data" within the IEs, "First Segment", "Subsequent or last Segment" and "Complete SIB" contains either complete system information block or a segment of a system information block. The actual system information blocks are defined in the following clauses.

10.2.49.8.1 Master Information Block

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Other information elements				
MIB Value tag	MP		MIB Value tag 10.3.8.7	
CN information elements				
Supported PLMN types	MP		PLMN Type 10.3.1.12	
PLMN Identity	CV GSM		PLMN Identity 10.3.1.11	
ANSI-41 information elements				
ANSI-41 Core Network Information	CV ANSI-41		ANSI-41 Core Network Information 10.3.9.1	
References to other system information blocks and scheduling blocks	MP		References to other system information blocks and scheduling blocks 10.3.8.11	

Condition	Explanation
GSM	The IE is mandatory if the IE "Supported PLMN Types" is set to 'GSM-MAP' or 'GSM-MAP AND ANSI-41', and not needed otherwise
ANSI-41	The IE is mandatory if the IE "Supported PLMN Types" is set to 'ANSI-41' or 'GSM-MAP AND ANSI-41', and not needed otherwise

10.2.49.8.2 Scheduling Block 1

Information Element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP		References to other system information blocks 10.3.8.11a	

10.2.49.8.3~~2~~ Scheduling Block 2

Information Element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP		References to other system information blocks 10.3.8.11a	

10.2.49.8.432 System Information Block type 1

The system information block type 1 contains NAS system information as well as UE timers and counters to be used in idle mode and in ~~CELL_DCH~~connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "PLMN" and update mechanism "value tag" may be referenced.~~
CN information elements				
CN common GSM-MAP NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
CN domain system information list	MP	1 to <maxCNdomains>		Send CN information for each CN domain.
>CN domain system information	MP		CN domain system information 10.3.1.2	
UE information				
~~UE Timers and constants in CELL_DCH~~	~~MD~~		~~UE Timers and constants in CELL_DCH 10.3.3.41~~	~~Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.41 apply and - For parameters with need OP, the parameters are absent~~
UE Timers and constants in idle mode	MD		UE Timers and constants in idle mode 10.3.3.43	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.43 apply and - For parameters with need OP, the parameters are absent
UE Timers and constants in connected mode	MD		UE Timers and constants in connected mode 10.3.3.42	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.42 apply and - For parameters with need OP, the parameters are absent

10.2.49.8.543 System Information Block type 2

The system information block type 2 contains the URA identity. ~~It also includes the UE timers and counters to be used in connected mode~~.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "PLMN" and update mechanism "value tag" may be referenced.~~
UTRAN mobility information elements				
URA identity list	MP	1 ..<maxURA>		
>URA identity	MP		URA identity 10.3.2.6	
~~**UE information elements**~~				
~~UE Timers and constants in connected mode~~	~~MP~~		~~UE Timers and constants in connected mode 10.3.3.42~~	~~Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.42 apply and - For parameters with need OP, the parameters are absent~~

10.2.49.8.6~~5~~4 System Information Block type 3

The system information block type 3 contains parameters for cell selection and re-selection. ~~The block may also contain scheduling information for other system information blocks~~.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
SIB4 Indicator	MP		Boolean	TRUE indicates that SIB4 is broadcast in the cell.
UTRAN mobility information elements				
Cell identity	MP		Cell identity 10.3.2.2	
Cell selection and re-selection info	MP		Cell selection and re-selection info for SIB3/4 10.3.2.3	
Cell Access Restriction	MP		Cell Access Restriction 10.3.2.1	

10.2.49.8.7~~6~~5 System Information Block type 4

The system information block type 4 contains parameters for cell selection and re-selection to be used in connected mode. ~~The block may also contain scheduling information for other system information blocks.~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
UTRAN mobility information elements				
Cell identity	MP		Cell identity 10.3.2.2	
Cell selection and re-selection info	MP		Cell selection and re-selection info for SIB3/4 10.3.2.3	
Cell Access Restriction	MP		Cell Access Restriction 10.3.2.1	

10.2.49.8.8~~7~~6 System Information Block type 5

The system information block type 5 contains parameters for the configuration of the common physical channels in the cell. ~~The block may also contain scheduling information for other system information blocks.~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
SIB6 Indicator	MP		Boolean	TRUE indicates that SIB6 is broadcast in the cell.
PhyCH information elements				
CHOICE *mode*	MP			
>FDD				
>>PICH Power offset	MP		PICH Power offset 10.3.6.49	
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.65	
>>PDSCH system information	OP		PDSCH system information 10.3.6.45	
>>Midamble configuration	MD		Midamble configuration 10.3.6.39	Default value is defined in 10.3.6.39

>>Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.58	For path loss calculation
>>PRACH Constant Value	OP		Constant Value 10.3.6.10	Operator controlled PRACH Margin
>>DPCH Constant Value	OP		Constant Value 10.3.6.10	Operator controlled UL DPCH Margin
>>PUSCH Constant Value	OP		Constant Value 10.3.6.10	Operator controlled PUSCH Margin
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.56	Note 1
PRACH system information list	MP		PRACH system information list 10.3.6.54	
Secondary CCPCH system information	MP		Secondary CCPCH system information 10.3.6.71	
CBS DRX Level 1 information	CV CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed in the message

10.2.49.8.98~~7~~ System Information Block type 6

The system information block type 6 contains parameters for the configuration of the common and shared physical channels to be used in connected mode. ~~The block may also contain scheduling information for other system information blocks.~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
PhyCH information elements				
CHOICE *mode*	MP			
>FDD				
>>PICH Power offset	MP		PICH Power offset 10.3.6.49	
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	
>>CSICH Power offset	OP		CSICH Power offset 10.3.6.14	
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.65	
>>PDSCH system information	OP		PDSCH system information 10.3.6.45	
>>Midamble configuration	MD		Midamble configuration 10.3.6.39	Default value is defined in 10.3.6.39

>>Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.58	For path loss calculation
>>PRACH Constant Value	OP		Constant Value 10.3.6.10	Operator controlled PRACH Margin for SF 16 case. In the SF 8 case 3dB is added.
>>DPCH Constant Value	OP		Constant Value 10.3.6.10	Operator controlled UL DPCH Margin
>>PUSCH Constant Value	OP		Constant Value 10.3.6.10	Operator controlled PUSCH Margin
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.56	Note 1
PRACH system information list	MP		PRACH system information list 10.3.6.54	
Secondary CCPCH system information	MP		Secondary CCPCH system information 10.3.6.71	
CBS DRX Level 1 information	CV CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed

10.2.49.8.10~~9~~8 System Information Block type 7

The system information block type 7 contains the fast changing parameters UL interference and Dynamic persistence level

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "expiration timer" may be referenced.~~
CHOICE mode	MP			
>FDD				
>>UL interference	MP		UL interference 10.3.6.85	
>TDD				(no data)
PhyCH information elements				
PRACHs listed in system information block type 5	MP	1 to<maxPRACH>		The order of the PRACHs is the same as in system information block type 5.
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.34	
PRACHs listed in system information block type 6	OP	1 to <maxPRACH>		The order of the PRACHs is the same as in system information block type 6.
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.34	

10.2.49.8.11~~09~~ System Information Block type 8

NOTE: Only for FDD.

The system information block type 8 contains static CPCH information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
UE information				
CPCH parameters	MP		CPCH parameters 10.3.3.7	
PhyCH information elements				
CPCH set info list	MP	1 to <maxCPCHsets>		
>CPCH set info	MP		CPCH set info 10.3.6.12	

10.2.49.8.1210 System Information Block type 9

NOTE: Only for FDD.

The system information block type 9 contains CPCH information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	OP		References to other system information blocks 10.3.8.11	Only system information blocks with area scope "Cell" and update mechanism "expiration timer" may be referenced.
PhyCH information elements				
CPCH set persistence levels list	MP	..1 to <maxCPCHsets>		
>CPCH set persistence levels	MP		CPCH persistence levels 10.3.6.11	

10.2.49.8.1321 System Information Block type 10

NOTE: Only for FDD.

The system information block type 10 contains information to be used by UEs having their DCH controlled by a DRAC procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	OP		References to other system information blocks 10.3.8.11	Only system information blocks with area scope "Cell" and update mechanism "expiration timer" may be referenced.
UE information				
DRAC system information	MP		DRAC system information 10.3.3.9	DRAC information is sent for each class of terminal

10.2.49.8.1432 System Information Block type 11

The system information block type 11 contains measurement control information to be used in the cell. ~~The block may also contain scheduling information for other system information blocks.~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
SIB12 Indicator	MP		Boolean	TRUE indicates that SIB12 is broadcast in the cell.
Measurement information elements				
FACH measurement occasion info	OP		FACH measurement occasion info 10.3.7.8	
Measurement control system information	MP		Measurement control system information 10.3.7.72	

10.2.49.8.1543 System Information Block type 12

The system information block type 12 contains measurement control information to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
Measurement information elements				
FACH measurement occasion info	OP		FACH measurement occasion info 10.3.7.8	
Measurement control system information	MP		Measurement control system information 10.3.7.72	

10.2.49.8.1654 System Information Block type 13

The system information block type 13 contains ANSI-41 system information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Other information elements				
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
CN Information Elements				
CN Domain system information list		1 to <maxCNdomains>		Send CN information for each CN domain.
>CN Domain system information			CN Domain system information 10.3.1.2	
UE Information				
UE timers and constants in idle mode	OP		UE timers and constants in idle mode 10.3.3.43	
Capability update requirement	OP		Capability update requirement 10.3.3.2	

10.2.49.8.1654.1 System Information Block type 13.1

The system information block type 13.1 contains the ANSI-41 RAND information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 information elements				
ANSI-41 RAND information	MP		ANSI-41 RAND information 10.3.9.6	

10.2.49.8.1654.2 System Information Block type 13.2

The system information block type 13.2 contains the ANSI-41 User Zone Identification information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 information elements				
ANSI-41 User Zone Identification information	MP		ANSI-41 User Zone Identification information 10.3.9.7	

10.2.49.8.1654.3 System Information Block type 13.3

The system information block type 13.3 contains the ANSI-41 Private Neighbor List information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 information elements				
ANSI-41 Private Neighbor List information	MP		ANSI-41 Private Neighbor List information 10.3.9.5	

10.2.49.8.1654.4 System Information Block type 13.4

The system information block type 13.4 contains the ANSI-41 Global Service Redirection information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 information elements				
ANSI-41 Global Service Redirection information	MP		ANSI-41 Global Service Redirection information 10.3.9.2	

10.2.49.8.1765 System Information Block type 14

NOTE: Only for TDD.

The system information block type 14 contains parameters for common and dedicated physical channel uplink outer loop power control information to be used in both idle and connected mode. ~~The block may also contain scheduling information for other system information blocks.~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Other information elements				
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
PhyCH information elements				
Individual Timeslot interference list	MP	1 to <maxTS>		
>Individual Timeslot interference	MP		Individual Timeslot interference 10.3.6.37	

10.2.49.8.1876 System Information Block type 15

The system information block type 15 contains information useful for LCS. In particular it allows the UE based method to perform localisation without dedicated signalling. For the UE assisted methods the signalling is reduced.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
LCS Cipher GPS Data Indicator	OP		LCS Cipher GPS Data Indicator 10.3.7.43	This is included if the SIB types 15.1, 15.2 & 15.3 are ciphered in accordance with the Data Assistance Ciphering Algorithm specified in [18]
LCS OTDOA assistance for SIB	OP		LCS OTDOA assistance for SIB 10.3.7.61	

10.2.49.8.1876.1 System Information Block type 15.1

The system information block type 15.1 contains information useful for LCS DGPS Corrections. The DGPS Corrections message contents are based on a Type-1 message of version 2.2 of the RTCM-SC-104 recommendation for differential service. This format is a standard of the navigation industry and is supported by all DGPS receivers.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UTRAN Time Flag	MP		Bitstring(1)	
Node B Clock Drift Flag	MP		Bitstring(1)	
Node B Clock Drift	OP		Real(-0.1..0.1 by a proper step)	This IE provides an estimate of the drift rate of the Node B clock relative to GPS time. It has units of μsec/sec (ppm) and a range of ±0.1. This IE aids the UE in maintaining the relation between GPS and cell timing over a period of time. A positive value for Node B Clock Drift indicates that the Node B clock is running at a greater frequency than desired.
Reference Location	MP		As defined in TS23.032	Provides a prior knowledge of the approximate location of the UE
SFN	OP		Integer(0..4095)	The SFN that occurs at the Reference GPS TOW time
Reference GPS TOW	MP		Integer(0..6.047*10^{11})	GPS Time of Week with scaling factor of 1 usec. This field time-stamps the start of the frame with SFN=0.
Status/Health	MP		Enumerated(UDRE scale 1.0, UDRE scale 0.75, UDRE scale 0.5, UDRE scale 0.3, UDRE scale 0.2, UDRE scale 0.1, no data, invalid data)	This field indicates the status of the differential corrections.
DPGS information	CV-Status	1..<maxSat>		The following fields contain the DPGS corrections. If the Cipher information is included these fields are ciphered.
>SatID	MP		Enumerated (0…63)	The satellite ID number.
>IODE	MP		Integer(0..255)	This IE is the sequence number for the ephemeris for the particular satellite. The MS can use this IE to determine if new ephemeris is used for calculating the corrections that are provided in the broadcast message. This eight-bit IE is incremented for each new set of ephemeris for the satellite and may occupy the numerical range of [0, 239] during normal operations.
>UDRE	MP		Enumerated(UDRE ≤ 1.0 m, 1.0m < UDRE ≤	User Differential Range Error. This field provides an estimate of the uncertainty (1-σ) in the corrections for the particular satellite. The value in this field

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
			UDRE ≤ 4.0m, 4.0m < UDRE ≤ 8.0m, 8.0m < UDRE)	shall be multiplied by the UDRE Scale Factor in the Status field to determine the final UDRE estimate for the particular satellite.
>PRC	MP		Integer(-2047..2047)	Scaling factor 0.32 meters (different from [13])
>RRC	MP		Integer(-127..127)	Scaling factor 0.032 meters/sec (different from [13])
>Delta PRC2	MP		Integer(-127..127)	The difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2.
>Delta RRC2	MP		Integer(-7..7)	The difference in the pseudorange rate-of-change correction between the satellite's ephemeris identified by IODE and IODE-2.

NOTE: Each UDRE value shall be adjusted based on the operation of an Integrity Monitor (IM) function which exists at the network (SRNC, GPS server, or reference GPS receiver itself). Positioning errors derived at the IM which are excessive relative to DGPS expected accuracy levels shall be used to scale the UDRE values to produce consistency.

Condition	Explanation
Status/Health	This IE is mandatory if "status" is not equal to "no data" or "invalid data", otherwise the IE is not needed

10.2.49.8.1876.2 System Information Block type 15.2

The system information block type 15.2 contains information useful for ephemeris and clock corrections of a particular satellite. These IE fields are extracted from the subframes 1 to 3 of the GPS navigation message [12].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Transmission TOW	MP		Enumerated(0. 1048575)	The approximate GPS time-of-week when the message is broadcast
SatID	MP		Enumerated(0..63)	Satellite ID
TLM Message	MP		Bit string(14)	
TLM Revd (C)	MP		Bit string(2)	
HOW	MP		Bit string(22)	
WN	MP		Bit string(10)	
C/A or P on L2	MP		Bit string(2)	
URA Index	MP		Bit string(4)	
SV Health	MP		Bit string(6)	
IODC	MP		Bit string(10(1))	
L2 P Data Flag	MP		Bit string(1)	
SF 1 Reserved	MP		Bit string(87)	
T_{GD}	MP		Bit string(8)	
t_{oc}	MP		Bit string(16(1))	
af_2	MP		Bit string(8)	
af_1	MP		Bit string(16)	
af_0	MP		Bit string(22)	
C_{rs}	MP		Bit string(16)	
Δn	MP		Bit string(16)	
M_0	MP		Bit string(32)	
C_{uc}	MP		Bit string(16)	
E	MP		Bit string(32(1))	
C_{us}	MP		Bit string(16)	
$(A)^{1/2}$	MP		Bit string(32(1))	
t_{oe}	MP		Bit string(16(1))	
Fit Interval Flag	MP		Bit string(1)	
AODO	MP		Bit string(5)	
C_{ic}	MP		Bit string(16)	
$OMEGA_0$	MP		Bit string(32)	
C_{is}	MP		Bit string(16)	
i_0	MP		Bit string(32)	
C_{rc}	MP		Bit string(16)	
ω	MP		Bit string(32)	
OMEGAdot	MP		Bit string(24)	
Idot	MP		Bit string(14)	
Spare/zero fill	MP		Bit string(20)	

Spare/zero fill	MP		Bit string(20)	

10.2.49.8.186.3 System Information Block type 15.3

The system information block type 15.3 contains information useful for ionospheric delay, UTC offset, and Almanac. These IE fields are extracted from the subframes 4 and 5 of the GPS navigation message, excluding the parity bits and other redundant bits [12].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Transmission TOW	MP		Enumerated(0. 1048575)	The approximate GPS time-of-week when the message is broadcast
SatMask	MP		Bitstring(1..32)	indicates the satellites that contain the pages being broadcast in this data set
LSB TOW	MP		Bit string(8)	
GPS Info	MP	1 to <Max_Dat _rep>		
>SFIO 0	MP		Bit string(1)	Each repetition corresponds to a different page no. as described in the table below
>Data ID	MP		Bit string(2)	
>Page No.	MP		Bit string(6)	
>Word 3	MP		Bit string(16)	
>Word 4	MP		Bit string(24)	
>Word 5	MP		Bit string(24)	
>Word 6	MP		Bit string(24)	
>Word 7	MP		Bit string(24)	
>Word 8	MP		Bit string(24)	
>Word 9	MP		Bit string(24)	
>Word 10	MP		Bit string(22)	
Spare/zero fill	MP		Bit string(5)	

Mapping of Almanac, Health, Iono, and UTC Data to Subframe Number and Page Number

Data Type	Subframe	Page(s)
Almanac Data (SV1 – 24)	5	1 - 24
Almanac Data (SV25 – 32)	4	2, 3, 4, 5, 7, 8, 9, 10
SV Health (SV1 – 24)	5	25
SV Health (SV25 – 32)	4	25
Iono/UTC Corrections	4	18

Multi Bound	Explanation
Max_Dat_rep	Maximum number of repeats=3

10.2.49.8.1~~7~~9 System Information Block type 16

The system information block type 16 contains radio bearer, transport channel and physical channel parameters to be stored by UE in idle and connected mode for use during handover to UTRAN. ~~The block may also contain scheduling information for other system information blocks.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Other information elements				
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
UE information elements				
Re-establishment timer	MP		Re-establishment timer 10.3.3.29	
RB information elements				
Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
TrCH Information Elements				
Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.9	
PhyCH Information Elements				
Predefined PhyCH configuration	MP		Predefined PhyCH configuration 10.3.6.55	

10.2.49.8.20~~18~~ System Information Block type 17

NOTE: Only for TDD.

The system information block type 17 contains fast changing parameters for the configuration of the shared physical channels to be used in connected mode. ~~The block may also contain scheduling information for other system information blocks.~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~References to other system information blocks~~	~~OP~~		~~References to other system information blocks 10.3.8.11~~	~~Only system information blocks with area scope "Cell" and update mechanism "value tag" may be referenced.~~
PhyCH information elements				
PUSCH system information	OP		PUSCH system information 10.3.6.65	
PDSCH system information	OP		PDSCH system information 10.3.6.45	

***** Next modified section *****

10.2.63 UTRAN MOBILITY INFORMATION

This message is used by UTRAN to allocate a new RNTI and to convey other UTRAN mobility related information to a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.14	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.17	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
New U-RNTI	OP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.8	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.47	Default value is the existing value of UTRAN DRX cycle length coefficient
UE Timers and constants in connected mode	MD		UE Timers and constants in connected mode 10.3.3.42	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.42 apply and - For parameters with need OP, the parameters are absent
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 with PDCP information list	OP	1 to <maxRBallRABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

10.3.3.41 UE Timers and Constants in CELL_DCH

This information element specifies timer- and constant values used by the UE in state CELL_DCH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T304	MD		Integer(100, 200, 400, 1000, 2000)	Value in milliseconds. Default value is 2000. At least 3 spare values are needed Criticality: reject is needed
N304	MD		Integer(0..7)	Default value is 2.
T308	MD		Integer(40, 80, 160, 320)	Value in milliseconds. Default value is 160.
T309	MD		Integer(1…8)	Value in seconds. Default value is 5.
T310	MD		Integer(40 .. 320 by step of 40)	Value in milliseconds. Default value is 160
N310	MD		Integer(0 .. 7)	Default value is 4
T311	MD		Integer(250 .. 2000 by step of 250)	Value in milliseconds. Default value is 2000
T313	MD		Integer (0..15)	Value in seconds. Default value is 3.
N313	MD		Integer (1, 2, 4, 10, 20, 50, 100, 200)	Default value is 20.
T314	MD		Integer (2,4,6,8,12, 16,20)	Value in seconds. Default value is 12.
T315	MD		Integer (0,10, 30, 60, 180, 600, 1200, 1800)	Value in seconds. Default value is 180.
N315	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1.

10.3.3.42 UE Timers and Constants in connected mode

This information element specifies timer- and constants values used by the UE in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T301	MD		Integer(100, 200 .. 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 2000.
N301	MD		Integer(0..7)	Default value is 2.
T302	MD		Integer(100, 200... 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 4000.
N302	MD		Integer(0..7)	Default value is 3.
T303	MD		Integer(100, 200... 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 2000.
N303	MD		Integer(0..7)	Default value is 3.
T304	MD		Integer(100, 200, 400, 1000, 2000)	Value in milliseconds. Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1. At least 3 spare values are needed Criticality: reject is needed
N304	MD		Integer(0..7)	Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
T305	MD		Integer(5, 10, 30, 60, 120, 360, 720, infinity)	Value in minutes. Default value is 30. Infinity means no update
T306	MD		Integer(5, 10, 30, 60, 120, 360, 720, infinity)	Value in minutes. Default value is 30. Infinity means no update
T307	MD		Integer(5, 10, 15, 20, 30, 40, 50)	Value in seconds. Default value is 30. At least 1 spare value needed Criticality: reject is needed
T308	MD		Integer(40, 80, 160, 320)	Value in milliseconds. Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
T309	MD		Integer(1…8)	Value in seconds. Default value is the actual value of the

				equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
T310	MD		Integer(40 .. 320 by step of 40)	Value in milliseconds. Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
N310	MD		Integer(0 .. 7)	Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
T311	MD		Integer(250 .. 2000 by step of 250)	Value in milliseconds. Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
T312	MD		Integer (0..15)	Value in seconds. Default value is 1.
N312	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1.
T313	MD		Integer (0..15)	Value in seconds. Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
N313	MD		Integer (1, 2, 4, 10, 20, 50, 100, 200)	Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
T314	MD		Integer(0, 2, 4, 6, 8, 12, 16, 20)	Value in seconds. Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
T315	MD		Integer (0,10, 30, 60, 180, 600, 1200, 1800)	Value in seconds. Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.
N315	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1. Note 1.

NOTE 1: If the value of SIB1 changes, the UE shall re-read SIB1 and use the new value of the parameter, if modified.

10.3.3.43 UE Timers and Constants in idle mode

This information element specifies timer- and constant values used by the UE in idle mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T300	MP		Integer(100, 200... 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds
N300	MP		Integer(0..7)	
T312	MP		Integer(0 .. 15)	Value in seconds
N312	MP		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	

10.3.6.26 Downlink information for each radio link

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.59	
>>PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.46	
>>PDSCH code mapping	OP		PDSCH code mapping 10.3.6.42	
>TDD				
>>Primary CCPCH info	OP		Primary CCPCH info 10.3.6.56	
Downlink DPCH info for each RL	OP		Downlink DPCH info for each RL 10.3.6.20	Note 1
Secondary CCPCH info	OP		Secondary CCPCH info 10.3.6.70	
References to system information blocks	OP	1 to <maxSIB-FACH>		Note 1
>Scheduling information	MP		Scheduling information 10.3.8.12	Note 1
>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.17a	

NOTE 1: This IE shall not be set in case of CELL UPDATE CONFIRM message.

10.3.6.69 SCCPCH Information for FACH

Secondary CCPCH info	MP		Secondary CCPCH info 10.3.6.70	
TFCS	MP		Transport format set 10.3.5.23	For FACHs and PCH
FACH/PCH information	MP	1 to <maxFACHPCH>		
>TFS	MP		Transport format set 10.3.5.23	For each FACHs and PCH
References to system information blocks	MP	1 to <maxSIB-FACH>		
>Scheduling information	MP		Scheduling information 10.3.8.12	
>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.17a	

10.3.8.11 References to other system information blocks and scheduling blocks

Information element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP	1 to <maxSIB>		System information blocks for which multiple occurrences are used, may appear more than once in this list
>Scheduling information	MP		Scheduling information, 10.3.8.12	
>SIB type	MP		SIB Type, 10.3.8.17	

10.3.8.11a References to other system information blocks

Information element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP	1 to <maxSIB>		System information blocks for which multiple occurrences are used, may appear more than once in this list
>Scheduling information	MP		Scheduling information, 10.3.8.12	
>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.17a	

10.3.8.12 Scheduling information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~SIB type~~	~~MP~~		~~SIB Type, 10.3.8.17~~	
CHOICE Value tag	OP			
>PLMN Value tag			PLMN Value tag 10.3.8.8	This IE is included if the following conditions are fulfilled: the area scope for the system information block is set to "PLMN" in table 8.1.1. a value tag is used to indicate changes in the system information block. the SIB type does not equal system information block type 16
>Predefined configuration identity and value tag			Predefined configuration identity and value tag 10.3.8.9	This IE is included if the following conditions are fulfilled: the SIB type equals system information block type 16
>Cell Value tag			Cell Value tag 10.3.8.4	This IE is included if the following conditions are fulfilled: the area scope for the system information block is set to "cell" in table 8.1.1. a value tag is used to indicate changes in the system information block.
Scheduling	~~MD~~MP			~~see below for default value~~
>SEG_COUNT	MD		SEG COUNT 10.3.8.13	Default value is 1
>SIB_REP	MP		Integer (4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096)	Repetition period for the SIB in frames
>SIB_POS	MP		Integer (0 ..Rep-2 by step of 2)	Position of the first segment Rep is the value of the SIB_REP IE
>SIB_POS offset info	MD	1..15		see below for default value
>>SIB_OFF	MP		Integer(2..32 by step of 2)	Offset of subsequent segments

Field	Default value
SIB_POS offset info	The default value is that all segments are consecutive, i.e., that the SIB_OFF = 2 for all segments except when MIB segment/complete MIB is scheduled to be transmitted in between segments from same SIB. In that case, SIB_OFF=4 in between segments which are scheduled to be transmitted at SFNprime = 8 *n-2 and 8*n + 2, and SIB_OFF=2 for the rest of the segments.
~~Scheduling~~	~~The default value is the scheduling of the SIB as specified in another SIB.~~

10.3.8.14 Segment index

Each system information segment has an individual segment index.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Segment index	MP		Integer (10..15)	Segments of a system information block are numbered starting with 0 for the first part segment and 1 for the next segment, which can be the first subsequent segment or a last segment.

10.3.8.17 SIB type

The SIB type identifies a specific system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB type	MP		Enumerated, see below	

The list of values to encode is:

Master information block,

System Information Type 1,

System Information Type 2,

System Information Type 3,

System Information Type 4,

System Information Type 5,

System Information Type 6,

System Information Type 7,

System Information Type 8,

System Information Type 9,

System Information Type 10,

System Information Type 11,

System Information Type 12,

System Information Type 13,

System Information Type 13.1,

System Information Type 13.2,

System Information Type 13.3,

System Information Type 13.4,

System Information Type 14,

System Information Type 15,

System Information Type 15.1,

System Information Type 15.2,

System Information Type 15.3,

System Information Type 16,

System Information Type 17.

Scheduling Block 1,

Scheduling Block 2

in addition, at least 5~~7~~ spare values, criticality: ignore, are needed.

10.3.8.17a SIB type SIBs only

The SIB type identifies a specific system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB type SIBs only	MP		Enumerated, see below	

The list of values to encode is:

- System Information Type 1,
- System Information Type 2,
- System Information Type 3,
- System Information Type 4,
- System Information Type 5,
- System Information Type 6,
- System Information Type 7,
- System Information Type 8,
- System Information Type 9,
- System Information Type 10,
- System Information Type 11,
- System Information Type 12,
- System Information Type 13,
- System Information Type 13.1,
- System Information Type 13.2,
- System Information Type 13.3,
- System Information Type 13.4,
- System Information Type 14,
- System Information Type 15,
- System Information Type 15.1,
- System Information Type 15.2,
- System Information Type 15.3,
- System Information Type 16,
- System Information Type 17.

in addition, at least 8 spare values, criticality: ignore, are needed.

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

    CN-DomainIdentity,
    CN-InformationInfo,
    FlowIdentifier,
    NAS-Message,
    PagingRecordTypeID,
    ServiceDescriptor,
    SignallingFlowInfoList
FROM CoreNetwork-IEs

    URA-Identity
FROM UTRANMobility-IEs

    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CellUpdateCause,
    CipheringAlgorithm,
    CipheringModeInfo,
    DRX-Indicator,
    EstablishmentCause,
    FailureCauseWithProtErr,

    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    PagingCause,
    PagingRecordList,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithInfo,
    Re-EstablishmentTimer,
    RedirectionInfo,
    RejectionCause,
    ReleaseCause,
    RRC-MessageTX-Count,
    SecurityCapability,
    START,
    STARTList,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    URA-UpdateCause,
    UTRAN-DRX-CycleLengthCoefficient,
    WaitTime
FROM UserEquipment-IEs

    PredefinedConfigIdentity,
    RAB-Info,
    RAB-Info-Short,
    RAB-InformationReconfigList,
    RAB-InformationSetupList,
    RB-ActivationTimeInfo,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,
```

```
    RB-COUNT-C-MSB-InformationList,
    RB-IdentityList,
    RB-InformationAffectedList,
    RB-InformationReconfigList,
    RB-InformationReleaseList,
    RB-InformationSetupList,
    RB-WithPDCP-InfoList,
    SRB-InformationSetupList,
    SRB-InformationSetupList2
FROM RadioBearer-IEs

    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-CommonTransChInfo,
    DL-DeletedTransChInfoList,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-CommonTransChInfo,
    UL-DeletedTransChInfoList
FROM TransportChannel-IEs

    AllocationPeriodInfo,
    CCTrCH-PowerControlInfo,
    ConstantValue,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformationPost,
    DL-InformationPerRL,
    DL-InformationPerRL-List,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-DPCH-PowerControlInfo,
    DL-OuterLoopControl,
    DL-PDSCH-Information,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    IndividualTS-InterferenceList,
    MaxAllowedUL-TX-Power,
    PDSCH-CapacityAllocationInfo,
    PDSCH-Identity,
    PDSCH-Info,
    PRACH-RACH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-Identity,
    RL-AdditionInformationList,
    RL-RemovalInformationList,
    SSDT-Information,
    TFC-ControlDuration,
    TimeslotList,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-DPCH-Info,
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-TimingAdvance,
    UL-TimingAdvanceControl
FROM PhysicalChannel-IEs

    AdditionalMeasurementID-List,
    EventResults,
    MeasuredResults,
    MeasuredResultsList,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementIdentityNumber,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList
FROM Measurement-IEs

    BCCH-ModificationInfo,
```

```
    CDMA2000-MessageList,
    GSM-MessageList,
    InterSystemHO-Failure,
    InterSystemMessage,
    ProtocolErrorInformation,
    SegCount,
    SegmentIndex,
    SFN-Prime,
    SIB-Data-fixed,
    SIB-Data-variable,
    SIB-Type
FROM Other-IEs

    maxSIBperMsg
FROM Constant-definitions;

-- **************************************************
--
-- ACTIVE SET UPDATE (FDD only)
--
-- **************************************************

ActiveSetUpdate ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          ActiveSetUpdate-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

ActiveSetUpdate-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        newU-RNTI                       U-RNTI                              OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        rl-AdditionInformationList      RL-AdditionInformationList          OPTIONAL,
        rl-RemovalInformationList       RL-RemovalInformationList           OPTIONAL,
        tx-DiversityMode                TX-DiversityMode                    OPTIONAL,
        ssdt-Information                SSDT-Information                    OPTIONAL
}

-- **************************************************
--
-- ACTIVE SET UPDATE COMPLETE (FDD only)
--
-- **************************************************

ActiveSetUpdateComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- ACTIVE SET UPDATE FAILURE (FDD only)
--
-- **************************************************

ActiveSetUpdateFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

```
--
-- CELL UPDATE
--
-- ************************************************

CellUpdate ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        startList       STARTList,
        am-RLC-ErrorIndicationC-plane   BOOLEAN,
        am-RLC-ErrorIndicationU-plane   BOOLEAN,
        cellUpdateCause                 CellUpdateCause,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
        -- TABULAR: Protocol error information is nested in
        -- ProtocolErrorIndicatorWithInfo.
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- CELL UPDATE CONFIRM
--
-- ************************************************

CellUpdateConfirm ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          CellUpdateConfirm-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

CellUpdateConfirm-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-ResetIndicatorC-Plane       BOOLEAN,
        rlc-ResetIndicatorU-Plane       BOOLEAN,
 -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        prach-RACH-Info                 PRACH-RACH-Info                     OPTIONAL,
        dl-InformationPerRL             DL-InformationPerRL                 OPTIONAL
}

-- ************************************************
--
-- CELL UPDATE CONFIRM for CCCH
--
-- ************************************************

CellUpdateConfirm-CCCH ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        cellUpdateConfirm               CellUpdateConfirm
}


-- ************************************************
--
-- COUNTER CHECK
--
-- ************************************************
```

```
CounterCheck ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          CounterCheck-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

CounterCheck-v1-IEs ::= SEQUENCE {
    -- Radio bearer IEs
        rb-COUNT-C-MSB-InformationList  RB-COUNT-C-MSB-InformationList
}

-- **************************************************
--
-- COUNTER CHECK RESPONSE
--
-- **************************************************

CounterCheckResponse ::= SEQUENCE {
    -- Radio bearer IEs
        rb-COUNT-C-InformationList      RB-COUNT-C-InformationList          OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- DOWNLINK DIRECT TRANSFER
--
-- **************************************************

DownlinkDirectTransfer ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          DownlinkDirectTransfer-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

DownlinkDirectTransfer-v1-IEs ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
        nas-Message                     NAS-Message
}

-- **************************************************
--
-- DOWNLINK OUTER LOOP CONTROL
--
-- **************************************************

DownlinkOuterLoopControl ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          DownlinkOuterLoopControl-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

DownlinkOuterLoopControl-v1-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-OuterLoopControl             DL-OuterLoopControl,
        dl-DPCH-PowerControlInfo        DL-DPCH-PowerControlInfo            OPTIONAL,
    -- Extension mechanism for non- release99 information
        criticalExtension               SEQUENCE {}                         OPTIONAL,
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

-- **************************************************
--
-- HANDOVER TO UTRAN COMMAND
--
-- **************************************************


HandoverToUTRANCommand ::= CHOICE {
    v1                              SEQUENCE {
```

```
        v1-IEs                          HandoverToUTRANCommand-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

HandoverToUTRANCommand-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        activationTime                  ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
        rab-Info                        RAB-Info-Short,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                re-EstablishmentTimer           Re-EstablishmentTimer,
                srb-InformationSetupList        SRB-InformationSetupList,
                rb-InformationSetupList         RB-InformationSetupList,
                ul-CommonTransChInfo            UL-CommonTransChInfo,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
                ul-DPCH-Info                    UL-DPCH-Info,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        dl-PDSCH-Information            DL-PDSCH-Information OPTIONAL,
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation,
                dl-InformationPerRL-List        DL-InformationPerRL-List,
                frequencyInfo                   FrequencyInfo
            },
            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.
                predefinedConfigIdentity        PredefinedConfigIdentity,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostFDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL-List        DL-InformationPerRL-ListPostFDD,
                        frequencyInfo                   FrequencyInfoFDD
                    },
                    tdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                        dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                        frequencyInfo                   FrequencyInfoTDD,
                        primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                    }

                }
            }
        },
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power
}

-- **************************************************
--
-- HANDOVER TO UTRAN COMPLETE
--
-- **************************************************

HandoverToUTRANComplete ::= SEQUENCE {
    --TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
    -- TABULAR: the IE below is conditional on history.
        startList                       STARTList                           OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

```
-- INITIAL DIRECT TRANSFER
--
-- **************************************************

InitialDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        serviceDescriptor               ServiceDescriptor,
        flowIdentifier                  FlowIdentifier,
        cn-DomainIdentity               CN-DomainIdentity,
        nas-Message                     NAS-Message,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- INTER-SYSTEM HANDOVER COMMAND
--
-- **************************************************

InterSystemHandoverCommand-GSM ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          InterSystemHandoverCommand-GSM-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

InterSystemHandoverCommand-GSM-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        activationTime                  ActivationTime                      OPTIONAL,
    -- Radio bearer IEs
        remainingRAB-Info               RAB-Info                            OPTIONAL,
    -- Other IEs
        message-and-extension           CHOICE {
            gsm-Message                     SEQUENCE {},
            -- In this case, what follows the basic production is a variable length bit string
            -- with no length field, containing the GSM message including GSM padding up to end
            -- of container, to be analysed according to GSM specifications
            with-extension                  SEQUENCE {
                messages                        GSM-MessageList
            }
        }
}

InterSystemHandoverCommand-CDMA2000 ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          InterSystemHandoverCommand-CDMA2000-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

InterSystemHandoverCommand-CDMA2000-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        activationTime                  ActivationTime                      OPTIONAL,
    -- Radio bearer IEs
        remainingRAB-Info               RAB-Info                            OPTIONAL,
    -- Other IEs
        cdma2000-MessageList            CDMA2000-MessageList
}

-- **************************************************
--
-- INTER-SYSTEM HANDOVER FAILURE
--
-- **************************************************

InterSystemHandoverFailure ::= SEQUENCE {
    -- Other IEs
        interSystemHO-Failure           InterSystemHO-Failure               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

```
--
-- MEASUREMENT CONTROL
--
-- ************************************************

MeasurementControl ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          MeasurementControl-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

MeasurementControl-v1-IEs ::= SEQUENCE {
    -- Measurement IEs
        measurementIdentityNumber       MeasurementIdentityNumber,
        measurementCommand              MeasurementCommand,
        -- TABULAR: The measurement type is included in MeasurementCommand.
        measurementReportingMode        MeasurementReportingMode            OPTIONAL,
        additionalMeasurementList       AdditionalMeasurementID-List        OPTIONAL,
    -- Physical channel IEs
        dpch-CompressedModeStatusInfo   DPCH-CompressedModeStatusInfo       OPTIONAL
}

-- ************************************************
--
-- MEASUREMENT CONTROL FAILURE
--
-- ************************************************

MeasurementControlFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- MEASUREMENT REPORT
--
-- ************************************************

MeasurementReport ::= SEQUENCE {
    -- Measurement IEs
        measurementIdentityNumber       MeasurementIdentityNumber,
        measuredResults                 MeasuredResults                     OPTIONAL,
        additionalMeasuredResults       MeasuredResultsList                 OPTIONAL,
        eventResults                    EventResults                        OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- PAGING TYPE 1
--
-- ************************************************

PagingType1 ::= SEQUENCE {
    -- User equipment IEs
        pagingRecordList                PagingRecordList                    OPTIONAL,
    -- Other IEs
        bcch-ModificationInfo           BCCH-ModificationInfo               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- PAGING TYPE 2
--
-- ************************************************

PagingType2 ::= SEQUENCE {
    -- User equipment IEs
        pagingCause                     PagingCause,
    -- Core network IEs
```

```
        cn-DomainIdentity               CN-DomainIdentity,
        pagingRecordTypeID              PagingRecordTypeID,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- PHYSICAL CHANNEL RECONFIGURATION
--
-- **************************************************

PhysicalChannelReconfiguration ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          PhysicalChannelReconfiguration-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

PhysicalChannelReconfiguration-v1-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,
        drx-Indicator                   DRX-Indicator,
        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
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        -- TABULAR: UL-ChannelRequirement contains the choice
        -- between UL DPCH info, PRACH info for RACH, CPCH SET info and CPCH set ID.
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- **************************************************
--
-- PHYSICAL CHANNEL RECONFIGURATION COMPLETE
--
-- **************************************************

PhysicalChannelReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- PHYSICAL CHANNEL RECONFIGURATION FAILURE
--
-- **************************************************

PhysicalChannelReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
```

```
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- PHYSICAL SHARED CHANNEL ALLOCATION (TDD only)
--
-- **************************************************

PhysicalSharedChannelAllocation ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          PhysicalSharedChannelAllocation-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

PhysicalSharedChannelAllocation-v1-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        c-RNTI                          C-RNTI                                  OPTIONAL,
    -- Physical channel IEs
        ul-TimingAdvance                UL-TimingAdvanceControl                 OPTIONAL,
        pusch-CapacityAllocationInfo    PUSCH-CapacityAllocationInfo            OPTIONAL,
        pdsch-CapacityAllocationInfo    PDSCH-CapacityAllocationInfo            OPTIONAL,
        confirmRequest                  ENUMERATED {
                                            confirmPDSCH, confirmPUSCH }        OPTIONAL,
        -- TABULAR: If the above value is not present, the default value "No Confirm"
        -- shall be used as specified in 10.2.23.
        iscpTimeslotList                    TimeslotList                            OPTIONAL
}

-- **************************************************
--
-- PUSCH CAPACITY REQUEST (TDD only)
--
-- **************************************************

PUSCHCapacityRequest ::= SEQUENCE {
    -- User equipment IEs
        c-RNTI                          C-RNTI                                  OPTIONAL,
    -- Measurement IEs
        trafficVolumeMeasuredResultsList
                                        TrafficVolumeMeasuredResultsList,
        timeslotListWithISCP            TimeslotListWithISCP                    OPTIONAL,
        primaryCCPCH-RSCP               PrimaryCCPCH-RSCP                       OPTIONAL,
        allocationConfirmation          CHOICE {
            pdschConfirmation               PDSCH-Identity,
            puschConfirmation               PUSCH-Identity
        }                                                                       OPTIONAL,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

RadioBearerReconfiguration ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RadioBearerReconfiguration-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RadioBearerReconfiguration-v1-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,
        drx-Indicator                   DRX-Indicator,
```

```
        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,
        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,
        dl-InformationPerRL-List        DL-InformationPerRL-List
}

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

RadioBearerReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

RadioBearerReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Radio bearer IEs
        potentiallySuccesfulBearerList  RB-IdentityList                     OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RADIO BEARER RELEASE
--
-- **************************************************

RadioBearerRelease ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RadioBearerRelease-v1-IEs,
```

```
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RadioBearerRelease-v1-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,
        drx-Indicator                   DRX-Indicator,
        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-InformationReleaseList       RB-InformationReleaseList,
        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,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- **************************************************
--
-- RADIO BEARER RELEASE COMPLETE
--
-- **************************************************

RadioBearerReleaseComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RADIO BEARER RELEASE FAILURE
--
-- **************************************************

RadioBearerReleaseFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Radio bearer IEs
```

```
        potentiallySuccesfulBearerList  RB-IdentityList                     OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RADIO BEARER SETUP
--
-- **************************************************

RadioBearerSetup ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RadioBearerSetup-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RadioBearerSetup-v1-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,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
        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-AddReconfTransChInfoList         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,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- **************************************************
--
-- RADIO BEARER SETUP COMPLETE
--
-- **************************************************

RadioBearerSetupComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
        start               START                   OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
```

```
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RADIO BEARER SETUP FAILURE
--
-- **************************************************

RadioBearerSetupFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Radio bearer IEs
        potentiallySuccesfulBearerList  RB-IdentityList                     OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RRC CONNECTION RE-ESTABLISHMENT
--
-- **************************************************

RRCConnectionReEstablishment ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionReEstablishment-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionReEstablishment-v1-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,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-ResetIndicatorC-plane       BOOLEAN,
        rlc-ResetIndicatorU-plane       BOOLEAN,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList          OPTIONAL,
        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
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         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,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
```

```
}

-- **************************************************
--
-- RRC CONNECTION RE-ESTABLISHMENT for CCCH
--
-- **************************************************

RRCConnectionReEstablishment-CCCH ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionReEstablishment-CCCH-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionReEstablishment-CCCH-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        rrcConnectionReEstablishment    RRCConnectionReEstablishment-v1-IEs
}

-- **************************************************
--
-- RRC CONNECTION RE-ESTABLISHMENT COMPLETE
--
-- **************************************************

RRCConnectionReEstablishmentComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
        start               START                   OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RRC CONNECTION RE-ESTABLISHMENT REQUEST
--
-- **************************************************

RRCConnectionReEstablishmentRequest ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        startList               STARTList,
        am-RLC-ErrorIndicationC-plane   BOOLEAN,
        am-RLC-ErrorIndicationU-plane   BOOLEAN,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
        -- TABULAR: The IE above is MD in tabular, but making a 2-way choice
        -- optional wastes one bit (using PER) and produces no additional
        -- information.
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RRC CONNECTION REJECT
--
-- **************************************************

RRCConnectionReject ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionReject-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}
```

```
RRCConnectionReject-v1-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        rejectionCause                  RejectionCause,
        waitTime                        WaitTime,
        redirectionInfo                 RedirectionInfo                     OPTIONAL
}

-- **************************************************
--
-- RRC CONNECTION RELEASE
--
-- **************************************************

RRCConnectionRelease::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionRelease-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionRelease-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-MessageTX-Count             RRC-MessageTX-Count                 OPTIONAL,
        -- The IE above is conditional on the UE state.
        releaseCause                    ReleaseCause
}

-- **************************************************
--
-- RRC CONNECTION RELEASE for CCCH
--
-- **************************************************

RRCConnectionRelease-CCCH::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionRelease-CCCH-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionRelease-CCCH-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        rrcConnectionRelease            RRCConnectionRelease-v1-IEs
}

-- **************************************************
--
-- RRC CONNECTION RELEASE COMPLETE
--
-- **************************************************

RRCConnectionReleaseComplete ::= SEQUENCE {
    -- User equipment IEs
        errorIndication                 FailureCauseWithProtErr             OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- RRC CONNECTION RELEASE COMPLETE for CCCH
--
-- **************************************************

RRCConnectionReleaseComplete-CCCH ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        rrcConnectionReleaseComplete    RRCConnectionReleaseComplete
}

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

```
--
-- RRC CONNECTION REQUEST
--
-- ************************************************

RRCConnectionRequest ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        establishmentCause              EstablishmentCause,
        protocolErrorIndicator          ProtocolErrorIndicator,
        -- The IE above is MD, but for compactness reasons no default value
        -- has been assigned to it.
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

RRCConnectionSetup::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          RRCConnectionSetup-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionSetup-v1-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI,
        new-c-RNTI                      C-RNTI                              OPTIONAL,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient,
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
        -- TABULAR: If the IE is not present, the default value defined in 10.3.3.2 shall
        -- be used.
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList2,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

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

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
        ue-SystemSpecificCapability     InterSystemMessage                  OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- RRC STATUS
```

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

RRCStatus ::= SEQUENCE {
    -- Other IEs
        protocolErrorInformation        ProtocolErrorInformation,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SecurityModeCommand ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          SecurityModeCommand-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

-- ************************************************
--
-- SECURITY MODE COMMAND
--
-- ************************************************

SecurityModeCommand-v1-IEs ::= SEQUENCE {
-- TABULAR: Integrity protection shall always be performed on this message.
    -- User equipment IEs
        securityCapability              SecurityCapability,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL
}

-- ************************************************
--
-- SECURITY MODE COMPLETE
--
-- ************************************************

SecurityModeComplete ::= SEQUENCE {
-- TABULAR: Integrity protection shall always be performed on this message.

    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfoList           OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- SECURITY MODE FAILURE
--
-- ************************************************

SecurityModeFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- SIGNALLING CONNECTION RELEASE
--
-- ************************************************

SignallingConnectionRelease::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          SignallingConnectionRelease-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

SignallingConnectionRelease-v1-IEs ::= SEQUENCE {
    -- Core network IEs
```

```
        signallingFlowInfoList          SignallingFlowInfoList
}

-- **************************************************
--
-- SIGNALLING CONNECTION RELEASE REQUEST
--
-- **************************************************

SignallingConnectionReleaseRequest ::= SEQUENCE {
    -- Core network IEs
        signallingFlowInfoList          SignallingFlowInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- SYSTEM INFORMATION for BCH
--
-- **************************************************

SystemInformation-BCH ::= SEQUENCE {
    -- Other information elements
        sfn-Prime                       SFN-Prime,
        payload                         CHOICE {
            noSegment                       NULL,
            firstSegment                    FirstSegment,
            subsequentSegment               SubsequentSegment,
            lastSegmentShort                        LastSegmentShort,
            lastAndFirst                    SEQUENCE {
                lastSegmentShort                        LastSegmentShort,
                firstSegment                    FirstSegmentShort
            },
            lastAndComplete                 SEQUENCE {
                completeSIB-List                CompleteSIB-List,
                lastSegment                     LastSegmentShort
            },
            lastAndCompleteAndFirst         SEQUENCE {
                lastSegment                     LastSegmentShort,
                completeSIB-List                CompleteSIB-List,
                firstSegment                    FirstSegmentShort
            },
            completeSIB-List                CompleteSIB-List,
            completeAndFirst                SEQUENCE {
                completeSIB-List                CompleteSIB-List,
                firstSegment                    FirstSegmentShort
            },
            completeSIB                     CompleteSIB,
            lastSegment                     LastSegment
        }
}

-- **************************************************
--
-- SYSTEM INFORMATION for FACH
--
-- **************************************************

SystemInformation-FACH ::= SEQUENCE {
    -- Other information elements
        payload                         CHOICE {
            noSegment                       NULL,
            firstSegment                    FirstSegment,
            subsequentSegment               SubsequentSegment,
            lastSegmentShort                        LastSegmentShort,
            lastAndFirst                    SEQUENCE {
                lastSegmentShort                        LastSegmentShort,
                firstSegment                    FirstSegmentShort
            },
            lastAndComplete                 SEQUENCE {
                completeSIB-List                CompleteSIB-List,
                lastSegment                     LastSegment
            },
            lastAndCompleteAndFirst         SEQUENCE {
                lastSegment                     LastSegment,
                completeSIB-List                CompleteSIB-List,
                firstSegment                    FirstSegmentShort
```

```
            },
            completeSIB-List                CompleteSIB-List,
            completeAndFirst                SEQUENCE {
                completeSIB-List                CompleteSIB-List,
                firstSegment                    FirstSegmentShort
            },
            completeSIB                     CompleteSIB,
            lastSegment                     LastSegment
        }
}

-- **************************************************
--
-- First segment
--
-- **************************************************

FirstSegment ::=                    SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        seg-Count                       SegCount,
        sib-Data-fixed                  SIB-Data-fixed
}

-- **************************************************
--
-- First segment (short)
--
-- **************************************************

FirstSegmentShort ::=               SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        seg-Count                       SegCount,
        sib-Data-variable               SIB-Data-variable
}

-- **************************************************
--
-- Subsequent segment
--
-- **************************************************

SubsequentSegment ::=               SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        segmentIndex                    SegmentIndex,
        sib-Data-fixed                  SIB-Data-fixed
}

-- **************************************************
--
-- Last segment
--
-- **************************************************

LastSegment ::=                     SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        segmentIndex                    SegmentIndex,
        sib-Data-fixed                  SIB-Data-fixed
    -- In case the SIB data is less than 222 bits, padding shall be used
    -- The same padding bits shall be used as defined in clause 12.1
}

LastSegmentShort ::=                        SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        segmentIndex                    SegmentIndex,
        sib-Data-variable               SIB-Data-variable
}

-- **************************************************
--
-- Complete SIB
--
-- **************************************************
```

```
CompleteSIB-List ::=                SEQUENCE (SIZE (1..maxSIBperMsg)) OF
                                        CompleteSIBshort

CompleteSIB ::=                     SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        sib-Data-fixed                  SIB-Data-fixed
    -- In case the SIB data is less than 222 bits, padding shall be used
    -- The same padding bits shall be used as defined in clause 12.1
}

CompleteSIBshort ::=                        SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        sib-Data-variable               SIB-Data-variable
}

-- ************************************************
--
-- SYSTEM INFORMATION CHANGE INDICATION
--
-- ************************************************

SystemInformationChangeIndication ::=   SEQUENCE {
    -- Other IEs
        bcch-ModificationInfo               BCCH-ModificationInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ************************************************
--
-- TRANSPORT CHANNEL RECONFIGURATION
--
-- ************************************************

TransportChannelReconfiguration::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          TransportChannelReconfiguration-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

TransportChannelReconfiguration-v1-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,
        drx-Indicator                   DRX-Indicator,
        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
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- 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,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

-- **************************************************
--
-- TRANSPORT CHANNEL RECONFIGURATION COMPLETE
--
-- **************************************************

TransportChannelReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- TRANSPORT CHANNEL RECONFIGURATION FAILURE
--
-- **************************************************

TransportChannelReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- TRANSPORT FORMAT COMBINATION CONTROL
--
-- **************************************************

TransportFormatCombinationControl ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message when transmitting this
message
    -- on the transparent mode signalling DCCH.
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            tfcs-ID                             TFCS-Identity   OPTIONAL
            }
    },
    dpch-TFCS-InUplink                  TFC-Subset,
    tfc-ControlDuration                 TFC-ControlDuration                 OPTIONAL,
    -- The information element is not included when transmitting the message
    -- on the transparent mode signalling DCCH and is optional otherwise
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- TRANSPORT FORMAT COMBINATION CONTROL FAILURE
--
-- **************************************************

TransportFormatCombinationControlFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- UE CAPABILITY ENQUIRY
```

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

UECapabilityEnquiry ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          UECapabilityEnquiry-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

UECapabilityEnquiry-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        capabilityUpdateRequirement     CapabilityUpdateRequirement
}

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

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-SystemSpecificCapability     InterSystemMessage                  OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

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

UECapabilityInformationConfirm ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          UECapabilityInformationConfirm-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

UECapabilityInformationConfirm-v1-IEs ::= SEQUENCE {
}

-- **************************************************
--
-- UPLINK DIRECT TRANSFER
--
-- **************************************************

UplinkDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        flowIdentifier                  FlowIdentifier,
        nas-Message                     NAS-Message,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- UPLINK PHYSICAL CHANNEL CONTROL
--
-- **************************************************

UplinkPhysicalChannelControl ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          UplinkPhysicalChannelControl-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}
```

```
UplinkPhysicalChannelControl-v1-IEs ::= SEQUENCE {
    -- Physical channel IEs
        ccTrCH-PowerControlInfo         CCTrCH-PowerControlInfo             OPTIONAL,
        timingAdvance                   UL-TimingAdvanceControl             OPTIONAL,
        prach-ConstantValue             ConstantValue                       OPTIONAL,
        pusch-ConstantValue             ConstantValue                       OPTIONAL
}

-- **************************************************
--
-- URA UPDATE
--
-- **************************************************

URAUpdate ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        ura-UpdateCause                 URA-UpdateCause,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- **************************************************
--
-- URA UPDATE CONFIRM
--
-- **************************************************

URAUpdateConfirm ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          URAUpdateConfirm-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

URAUpdateConfirm-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL
}

-- **************************************************
--
-- URA UPDATE CONFIRM for CCCH
--
-- **************************************************

URAUpdateConfirm-CCCH ::= CHOICE {
    v1                              SEQUENCE {
        v1-IEs                          URAUpdateConfirm-CCCH-v1-IEs,
        nonCriticalExtensions           SEQUENCE {}
    },
    criticalExtensions              SEQUENCE {}
}

URAUpdateConfirm-CCCH-v1-IEs ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        uraUpdateConfirm                URAUpdateConfirm-v1-IEs
}

-- **************************************************
--
-- UTRAN MOBILITY INFORMATION
```

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

UTRANMobilityInformation ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants           OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ****************************************************
--
-- UTRAN MOBILITY INFORMATION CONFIRM
--
-- ****************************************************

UTRANMobilityInformationConfirm ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

-- ****************************************************
--
-- UTRAN MOBILITY INFORMATION FAILURE
--
-- ****************************************************

UTRANMobilityInformationFailure ::= SEQUENCE {
    -- UE information elements
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

END
```

11.3.3 User equipment information elements

```
UserEquipment-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CN-DomainIdentity,
    IMEI,
    IMSI-GSM-MAP,
    LAI,
    P-TMSI-GSM-MAP,
    RAI,
    TMSI-GSM-MAP
FROM CoreNetwork-IEs

    RB-ActivationTimeInfoList
FROM RadioBearer-IEs

    FrequencyInfo,
    PowerControlAlgorithm,
    TGPSI
FROM PhysicalChannel-IEs
```

```
    InterSystemInfo
FROM Measurement-IEs

    ProtocolErrorInformation
FROM Other-IEs

    maxASC,
    maxCNdomains,
    maxDRACclasses,
    maxFrequencybands,
    maxPage1,
    maxSystemCapability
FROM Constant-definitions;


ActivationTime ::=                  INTEGER (0..255)
-- TABULAR : value 'now' always appear as default, and is encoded by absence of the field

BackoffControlParams ::=            SEQUENCE {
    n-AP-RetransMax                     N-AP-RetransMax,
    n-AccessFails                       N-AccessFails,
    nf-BO-NoAICH                        NF-BO-NoAICH,
    ns-BO-Busy                          NS-BO-Busy,
    nf-BO-AllBusy                       NF-BO-AllBusy,
    nf-BO-Mismatch                      NF-BO-Mismatch,
    t-CPCH                              T-CPCH
}

C-RNTI ::=                          BIT STRING (SIZE (16))

CapabilityUpdateRequirement ::=     SEQUENCE {
    ue-RadioCapabilityUpdateRequirement BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CellUpdateCause ::=                 ENUMERATED {
                                        cellReselection,
                                        periodicCellUpdate,
                                        ul-DataTransmission,
                                        pagingResponse,
                                        rb-ControlResponse,
                                        re-enteredServiceArea,
                                        spare1, spare2 }

ChipRateCapability ::=              ENUMERATED {
                                        mcps3-84, mcps1-28 }

CipheringAlgorithm ::=              ENUMERATED {
                                        uea0, uea1, spare1, spare2,
                                        spare3, spare4, spare5, spare6,
                                        spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14 }

CipheringModeCommand ::=            CHOICE {
    startRestart                        CipheringAlgorithm,
    stopCiphering                       NULL
}

CipheringModeInfo ::=               SEQUENCE {
    cipheringModeCommand                CipheringModeCommand,
    -- TABULAR: The ciphering algorithm is included in
    -- the CipheringModeCommand.
    activationTimeForDPCH               ActivationTime                      OPTIONAL,
    rb-DL-CiphActivationTimeInfo        RB-ActivationTimeInfoList           OPTIONAL
}

CN-DRX-CycleLengthCoefficient ::=   INTEGER (6..12)

CN-PagedUE-Identity ::=             CHOICE {
    imsi-GSM-MAP                        IMSI-GSM-MAP,
    tmsi-GSM-MAP                        TMSI-GSM-MAP,
    p-TMSI-GSM-MAP                      P-TMSI-GSM-MAP,
    imsi-DS-41                          IMSI-DS-41,
    tmsi-DS-41                          TMSI-DS-41,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}
```

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


CPCH-Parameters ::=                 SEQUENCE {
    initialPriorityDelayList            InitialPriorityDelayList            OPTIONAL,
    backoffControlParams                BackoffControlParams,
    powerControlAlgorithm               PowerControlAlgorithm,
    -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    dl-DPCCH-BER                        DL-DPCCH-BER
}

DL-DPCCH-BER ::=                    INTEGER (0..63)

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

DL-PhysChCapabilityTDD ::=          SEQUENCE {
    maxSimultaneousCCTrCH-Count         MaxSimultaneousCCTrCH-Count,
    maxTS-PerFrame                      MaxTS-PerFrame,
    maxPhysChPerFrame                   MaxPhysChPerFrame,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS
}

DL-TransChCapability ::=            SEQUENCE {
    maxNoBitsReceived                   MaxNoBits,
    maxConvCodeBitsReceived             MaxNoBits,
    turboDecodingSupport                TurboSupport,
    maxSimultaneousTransChs             MaxSimultaneousTransChsDL,
    maxReceivedTransportBlocks          MaxTransportBlocksDL,
    maxNumberOfTFC-InTFCS               MaxNumberOfTFC-InTFCS-DL,
    maxNumberOfTF                       MaxNumberOfTF
}

DRAC-SysInfo ::=                    SEQUENCE {
    transmissionProbability             TransmissionProbability,
    maximumBitRate                      MaximumBitRate
}

DRAC-SysInfoList ::=                SEQUENCE (SIZE (1..maxDRACclasses)) OF
                                        DRAC-SysInfo

DRX-Indicator ::=                   ENUMERATED {
                                        noDRX,
                                        drxWithCellUpdating,
                                        drxWithURA-Updating,
                                        spare1 }

ESN-DS-41 ::=                       BIT STRING (SIZE (32))

EstablishmentCause ::=              ENUMERATED {
                                        originatingConversationalCall,
                                        originatingStreamingCall,
                                        originatingInteractiveCall,
                                        originatingBackgroundCall,
                                        originatingSubscribedTrafficCall,
                                        terminatingConversationalCall,
                                        terminatingStreamingCall,
                                        terminatingInteractiveCall,
                                        terminatingBackgroundCall,
                                        emergencyCall,
                                        interSystemCellReselection,
```

```
                                        registration,
                                        detach,
                                        sms,
                                        callRe-establishment,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8,
                                        spare9, spare10, spare11, spare12,
                                        spare13, spare14, spare15, spare16,
                                        spare17 }

FailureCauseWithProtErr ::=         CHOICE {
    configurationUnsupported            NULL,
    physicalChannelFailure              NULL,
    incompatibleSimultaneousReconfiguration
                                        NULL,
    compressedModeRuntimeError          TGPSI,
    protocolError                       ProtocolErrorInformation,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

GSM-Measurements ::=                SEQUENCE {
    gsm900                              BOOLEAN,
    dcs1800                             BOOLEAN,
    gsm1900                             BOOLEAN
}


ICS-Version ::=                     ENUMERATED {
                                        r99,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7 }

IMSI-and-ESN-DS-41 ::=              SEQUENCE {
    imsi-DS-41                          IMSI-DS-41,
    esn-DS-41                           ESN-DS-41
}

IMSI-DS-41 ::=                      OCTET STRING (SIZE (5..7))

InitialPriorityDelayList ::=        SEQUENCE (SIZE (maxASC)) OF
                                        NS-IP

InitialUE-Identity ::=              CHOICE {
    imsi                                IMSI-GSM-MAP,
    tmsi-and-LAI                        TMSI-and-LAI-GSM-MAP,
    p-TMSI-and-RAI                      P-TMSI-and-RAI-GSM-MAP,
    imei                                IMEI,
    esn-DS-41                           ESN-DS-41,
    imsi-DS-41                          IMSI-DS-41,
    imsi-and-ESN-DS-41                  IMSI-and-ESN-DS-41,
    tmsi-DS-41                          TMSI-DS-41,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL,
    spare5                              NULL,
    spare6                              NULL,
    spare7                              NULL,
    spare8                              NULL
}

IntegrityCheckInfo ::=              SEQUENCE {
    messageAuthenticationCode           MessageAuthenticationCode,
    rrc-MessageSequenceNumber           RRC-MessageSequenceNumber
}

IntegrityProtActivationInfo ::=     SEQUENCE {
    rrc-MessageSequenceNumberList       RRC-MessageSequenceNumberList
}

IntegrityProtectionAlgorithm ::=    ENUMERATED {
                                        uia1, spare1, spare2, spare3,
                                        spare4, spare5, spare6, spare7,
                                        spare8, spare9, spare10, spare11,
                                        spare12, spare13, spare14, spare15 }
```

```
IntegrityProtectionModeCommand ::=  CHOICE {
    startIntegrityProtection            SEQUENCE {
        integrityProtInitNumber             IntegrityProtInitNumber
    },
    modify                              SEQUENCE {
        dl-IntegrityProtActivationInfo      IntegrityProtActivationInfo
    },
    spare1                              NULL,
    spare2                              NULL
}

IntegrityProtectionModeInfo ::=     SEQUENCE {
    integrityProtectionModeCommand      IntegrityProtectionModeCommand,
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialization number have been nested inside
    -- IntegrityProtectionModeCommand.
    integrityProtectionAlgorithm        IntegrityProtectionAlgorithm        OPTIONAL
}

IntegrityProtInitNumber ::=         BIT STRING (SIZE (32))

LCS-Capability ::=                  SEQUENCE {
    standaloneLocMethodsSupported       BOOLEAN,
    ue-BasedOTDOA-Supported             BOOLEAN,
    networkAssistedGPS-Supported        NetworkAssistedGPS-Supported,
    gps-ReferenceTimeCapable            BOOLEAN,
    supportForIDL                       BOOLEAN
}


MaxHcContextSpace ::=                   ENUMERATED  {
                                            by512, by1024, by2048, by4096,
                                            by8192, spare1, spare2, spare3 }


MaximumAM-EntityNumberRLC-Cap ::=   ENUMERATED {
                                        am3, am4, am5, am6,
                                        am8, am16, am32, spare1 }

-- Actual value = IE value * 16
MaximumBitRate ::=                  INTEGER (0..32)


MaximumRLC-WindowSize ::=           ENUMERATED { mws2047, mws4095 }

MaxNoDPDCH-BitsTransmitted ::=      ENUMERATED {
                                        b600, b1200, b2400, b4800,
                                        b9600, b19200, b28800, b38400,
                                        b48000, b57600, spare1, spare2,
                                        spare3, spare4, spare5, spare6 }

MaxNoBits ::=                       ENUMERATED {
                                        b640, b1280, b2560, b3840, b5120,
                                        b6400, b7680, b8960, b10240,
                                        b20480, b40960, b81920, b163840,
                                        spare1, spare2, spare3 }


MaxNoPhysChBitsReceived ::=         ENUMERATED {
                                        b600, b1200, b2400, b3600,
                                        b4800, b7200, b9600, b14400,
                                        b19200, b28800, b38400, b48000,
                                        b57600, b67200, b76800, spare1 }

MaxNoSCCPCH-RL ::=                  ENUMERATED {
                                        rl1, spare1, spare2, spare3,
                                        spare4, spare5, spare6, spare7 }

MaxNumberOfTF ::=                   ENUMERATED {
                                        tf32, tf64, tf128, tf256,
                                        tf512, tf1024, spare1, spare2 }

MaxNumberOfTFC-InTFCS-DL ::=        ENUMERATED {
                                        tfc16, tfc32, tfc48, tfc64, tfc96,
                                        tfc128, tfc256, tfc512, tfc1024,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7 }
```

```
MaxNumberOfTFC-InTFCS-UL ::=        ENUMERATED {
                                        tfc4, tfc8, tfc16, tfc32, tfc48, tfc64,
                                        tfc96, tfc128, tfc256, tfc512, tfc1024,
                                        spare1, spare2, spare3, spare4,
                                        spare5 }


-- TABULAR: Used range in Release99 is 1..224, values 225-256 are spare values
MaxPhysChPerFrame ::=               INTEGER (1..256)

MaxPhysChPerTimeslot ::=            ENUMERATED {
                                        ts1, ts2 }


MaxPhysChPerTS ::=                  INTEGER (1..16)

MaxSimultaneousCCTrCH-Count ::=     INTEGER (1..8)

MaxSimultaneousTransChsDL ::=       ENUMERATED {
                                        e4, e8, e16, e32 }

MaxSimultaneousTransChsUL ::=       ENUMERATED {
                                        e2, e4, e8, e16, e32,
                                        spare1, spare2, spare3 }

MaxTransportBlocksDL ::=            ENUMERATED {
                                        tb4, tb8, tb16, tb32, tb48,
                                        tb64, tb96, tb128, tb256, tb512,
                                        spare1, spare2, spare3,
                                        spare4, spare5, spare6 }

MaxTransportBlocksUL ::=            ENUMERATED {
                                        tb2, tb4, tb8, tb16, tb32, tb48,
                                        tb64, tb96, tb128, tb256, tb512,
                                        spare1, spare2, spare3,
                                        spare4, spare5 }

-- TABULAR: Used range in Release99 is 1..14
MaxTS-PerFrame ::=                  INTEGER (1..16)

-- TABULAR: This IE contains dependencies to UE-MultiModeRAT-Capability,
-- the conditional fields have been left mandatory for now.
MeasurementCapability ::=           SEQUENCE {
    downlinkCompressedMode              CompressedModeMeasCapability,
    uplinkCompressedMode                CompressedModeMeasCapability
}

MessageAuthenticationCode ::=       BIT STRING (SIZE (32))

MinimumSF-DL ::=                    ENUMERATED {
                                        sf1, sf16 }

MinimumSF-UL ::=                    ENUMERATED {
                                        sf1, sf2, sf4, sf8, sf16,
                                        spare1, spare2, spare3 }

MultiModeCapability ::=             ENUMERATED {
                                        tdd, fdd, fdd-tdd }


MultiRAT-Capability ::=             SEQUENCE {
    supportOfGSM                        BOOLEAN,
    supportOfMulticarrier               BOOLEAN
}


N-300 ::=                           INTEGER (0..7)

N-301 ::=                           INTEGER (0..7)

N-302 ::=                           INTEGER (0..7)

N-303 ::=                           INTEGER (0..7)

N-304 ::=                           INTEGER (0..7)

N-310 ::=                           INTEGER (0..7)
```

```
N-312 ::=                           ENUMERATED {
                                        s1, s50, s100, s200, s400,
                                        s600, s800, s1000 }


N-313 ::=                           ENUMERATED {
                                        s1, s2, s4, s10, s20,
                                         s50, s100, s200 }

N-315 ::=                           ENUMERATED {
                                        s1, s50, s100, s200, s400,
                                        s600, s800, s1000 }

N-AccessFails ::=                   INTEGER (1..64)

N-AP-RetransMax ::=                 INTEGER (1..64)

NetworkAssistedGPS-Supported ::=    ENUMERATED {
                                        networkBased,
                                        ue-Based,
                                        bothNetworkAndUE-Based,
                                        noNetworkAssistedGPS }

NF-BO-AllBusy ::=                   INTEGER (0..31)

NF-BO-NoAICH ::=                    INTEGER (0..31)

NF-BO-Mismatch ::=                  INTEGER (0..127)

NS-BO-Busy ::=                      INTEGER (0..63)

NS-IP ::=                           INTEGER (0..28)

P-TMSI-and-RAI-GSM-MAP ::=          SEQUENCE {
    p-TMSI                              P-TMSI-GSM-MAP,
    rai                                 RAI
}


PagingCause ::=                     ENUMERATED {
                                        terminatingConversationalCall,
                                        terminatingStreamingCall,
                                        terminatingInteractiveCall,
                                        terminatingBackgroundCall,
                                        sms,
                                        spare1, spare2, spare3 }

PagingRecord ::=                    CHOICE {
    cn-Page                             SEQUENCE {
        pagingCause                         PagingCause,
        cn-DomainIdentity                   CN-DomainIdentity,
        cn-pagedUE-Identity                 CN-PagedUE-Identity
    },
    utran-Page                          U-RNTI
        pagingCause                         PagingCause,
        cn-DomainIdentity                   CN-DomainIdentity,

    }
}

PagingRecordList ::=                SEQUENCE (SIZE (1..maxPage1)) OF
                                        PagingRecord


PDCP-Capability ::=                 SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    supportForRfc2507                   CHOICE {
        notSupported                        NULL,
        supported                           MaxHcContextSpace
    }
}

PhysicalChannelCapability ::=       SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
```

```
        },
        tdd                                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }
    }
}

ProtocolErrorCause ::=              ENUMERATED {
                                        asn1-ViolationOrEncodingError,
                                        messageTypeNonexistent,
                                        messageNotCompatibleWithReceiverState,
                                        ie-ValueNotComprehended,
                                        conditionalInformationElementError,
                                        messageExtensionNotComprehended,
                                        spare1, spare2 }

ProtocolErrorIndicator ::=          ENUMERATED {
                                        noError, errorOccurred }

ProtocolErrorIndicatorWithInfo ::= CHOICE {
    noError                             NULL,
    errorOccurred                       ProtocolErrorInformation
}

RadioFrequencyBand ::=              ENUMERATED {
                                        a, b, c,
                                        spare1 }

RadioFrequencyBandList ::=          SEQUENCE (SIZE (1..maxFrequencybands)) OF
                                        RadioFrequencyBand


Re-EstablishmentTimer ::=           CHOICE {
    t-314                               T-314Value,
    t-315                               T-315Value
}

RedirectionInfo ::=                 CHOICE {
    frequencyInfo                       FrequencyInfo,
    interSystemInfo                     InterSystemInfo,
    spare                               NULL
}

RejectionCause ::=                  ENUMERATED {
                                        congestion,
                                        unspecified,
                                        spare1, spare2 }


ReleaseCause ::=                    ENUMERATED {
                                        normalEvent,
                                        unspecified,
                                        pre-emptiveRelease,
                                        congestion,
                                        re-establishmentReject,
    directedsignallingconnectionre-establishment,
    userInactivity,
                                        spare1, spare2, spare3,
                                        spare4, spare5, spare6,
                                        spare7, spare8, spare9 }

RF-Capability ::=                   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
            ue-PowerClass                   UE-PowerClass,
            txRxFrequencySeparation         TxRxFrequencySeparation
        },
        tdd                         SEQUENCE {
            ue-PowerClass               UE-PowerClass,
            radioFrequencyBandList      RadioFrequencyBandList,
            chipRateCapability          ChipRateCapability
        }
    }
}


RLC-Capability ::=                  SEQUENCE {
```

```
    totalRLC-AM-BufferSize              TotalRLC-AM-BufferSize,
    maximumRLC-WindowSize               MaximumRLC-WindowSize,
    maximumAM-EntityNumber              MaximumAM-EntityNumberRLC-Cap
}

RRC-MessageSequenceNumber ::=       INTEGER (0..15)


RRC-MessageSequenceNumberList ::=   SEQUENCE (SIZE (4..5)) OF
                                        RRC-MessageSequenceNumber

RRC-MessageTX-Count ::=             INTEGER (1..8)

S-RNTI ::=                          BIT STRING (SIZE (20))

S-RNTI-2 ::=                        INTEGER (0..1023)

SecurityCapability ::=              SEQUENCE {
    cipheringAlgorithmCap                   BIT STRING (SIZE (16)),
    integrityProtectionAlgorithmCap     BIT STRING (SIZE (16))
}


SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported                        NULL,
    supported                           SEQUENCE {
        maxNoSCCPCH-RL                      MaxNoSCCPCH-RL,
        simultaneousSCCPCH-DPCH-DPDCH-Reception
                                            BOOLEAN
        -- The IE above is applicable only if IE Support of PDSCH = TRUE
    }
}

SRNC-Identity ::=                   BIT STRING (SIZE (12))


START ::=               BIT STRING (SIZE (20))

STARTList ::=                       SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        STARTSingle


STARTSingle ::=                     SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    startValue                          START
}

SystemSpecificCapUpdateReq ::=      ENUMERATED {
                                        gsm, spare1, spare2, spare3,
                                        spare4, spare5, spare6, spare7,
                                        spare8, spare9, spare10, spare11,
                                        spare12, spare13, spare14, spare15 }

SystemSpecificCapUpdateReqList ::= SEQUENCE (SIZE (1..maxSystemCapability)) OF
                                        SystemSpecificCapUpdateReq


T-300 ::=                           ENUMERATED {
                                        ms100, ms200, ms400, ms600, ms800,
                                        ms1000, ms1200, ms1400, ms1600,
                                        ms1800, ms2000, ms3000, ms4000,
                                        ms6000, ms8000 }


T-301 ::=                           ENUMERATED {
                                        ms100, ms200, ms400, ms600, ms800,
                                        ms1000, ms1200, ms1400, ms1600,
                                        ms1800, ms2000, ms3000, ms4000,
                                        ms6000, ms8000 }


T-302 ::=                           ENUMERATED {
                                        ms100, ms200, ms400, ms600, ms800,
                                        ms1000, ms1200, ms1400, ms1600,
                                        ms1800, ms2000, ms3000, ms4000,
                                        ms6000, ms8000 }
```

```
T-303 ::=                           ENUMERATED {
                                        ms100, ms200, ms400, ms600, ms800,
                                        ms1000, ms1200, ms1400, ms1600,
                                        ms1800, ms2000, ms3000, ms4000,
                                        ms6000, ms8000 }

T-304 ::=                           ENUMERATED {
                                        ms100, ms200, ms400,
                                        ms1000, ms2000,
                                        spare1, spare2, spare3 }

T-305 ::=                           ENUMERATED {
                                        noUpdate, m5, m10, m30,
                                        m60, m120, m360, m720 }

T-306 ::=                           ENUMERATED {
                                        noUpdate, m5, m10, m30,
                                        m60, m120, m360, m720 }

T-307 ::=                           ENUMERATED {
                                        s5, s10, s15, s20,
                                        s30, s40, s50, spare1 }

T-308 ::=                           ENUMERATED {
                                        ms40, ms80, ms160, ms320 }

T-309 ::=                           INTEGER (1..8)

T-310 ::=                           ENUMERATED {
                                        ms40, ms80, ms120, ms160,
                                        ms200, ms240, ms280, ms320 }

T-311 ::=                           ENUMERATED {
                                        ms250, ms500, ms750, ms1000,
                                        ms1250, ms1500, ms1750, ms2000 }

T-312 ::=                           INTEGER (0..15)

T-313 ::=                           INTEGER (0..15)


T-314 ::=                           ENUMERATED {
                                        s0, s2, s4, s6, s8,
                                        s12, s16, s20 }


T-314Value ::=                      SEQUENCE {
    t-314                               T-314                           OPTIONAL
}


T-315 ::=                           ENUMERATED {
                                        s0, s10, s30, s60, s180,
                                        s600, s1200, s1800 }


T-315Value ::=                      SEQUENCE {
    t-315                               T-315                           OPTIONAL
}

T-CPCH ::=                          ENUMERATED {
                                        ct0, ct1 }

TMSI-and-LAI-GSM-MAP ::=            SEQUENCE {
    tmsi                                TMSI-GSM-MAP,
    lai                                 LAI
}

TMSI-DS-41 ::=                      OCTET STRING (SIZE (2..12))

TotalRLC-AM-BufferSize ::=          ENUMERATED {
                                        kb2, kb10, kb50, kb100,
                                        kb150, kb500, kb1000,
                                        spare1 }

-- Actual value = IE value * 0.125
TransmissionProbability ::=         INTEGER (1..8)
```

```
TransportChannelCapability ::=      SEQUENCE {
    dl-TransChCapability                DL-TransChCapability,
    ul-TransChCapability                UL-TransChCapability
}

TurboSupport ::=                    CHOICE {
    notSupported                        NULL,
    supported                           MaxNoBits
}

TxRxFrequencySeparation ::=         ENUMERATED {
                                        mhz190, mhz174-8-205-2,
                                        mhz134-8-245-2, spare1 }

U-RNTI ::=                          SEQUENCE {
    srnc-Identity                       SRNC-Identity,
    s-RNTI                              S-RNTI
}

U-RNTI-Short ::=                    SEQUENCE {
    srnc-Identity                       SRNC-Identity,
    s-RNTI-2                            S-RNTI-2
}


UE-ConnTimersAndConstants ::=       SEQUENCE {
-- Optional is used also for parameters for which the default value is the last one read in SIB1
    t-301                               T-301                               DEFAULT ms2000,
    n-301                               N-301                               DEFAULT 2,
    t-302                               T-302                               DEFAULT ms4000,
    n-302                               N-302                               DEFAULT 3,
    t-303                               T-303                               DEFAULT ms2000,
    n-303                               N-303                               DEFAULT 3,
    t-304                               T-304                               OPTIONAL,
    n-304                               N-304                               OPTIONAL,
    t-305                               T-305                               DEFAULT m30,
    t-306                               T-306                               DEFAULT m30,
    t-307                               T-307                               DEFAULT s30,
    t-308                               T-308                               OPTIONAL,
    t-309                               T-309                               OPTIONAL,
    t-310                               T-310                               DEFAULT ms160,
    n-310                               N-310                               DEFAULT 4,
    t-311                               T-311                               DEFAULT ms2000,
    t-312                               T-312                               DEFAULT 1,
    n-312                               N-312                               DEFAULT s1,
    t-313                               T-313                               OPTIONAL,
    n-313                               N-313                               OPTIONAL,
    t-314                               T-314                               OPTIONAL,
    t-315                               T-315                               OPTIONAL,
    n-315                               N-315                               OPTIONAL
}


UE-DCHTimersAndConstants ::=        SEQUENCE {
    t-304                               T-304                               DEFAULT ms2000,
    n-304                               N-304                               DEFAULT 2,
    t-308                               T-308                               DEFAULT ms160,
    t-309                               T-309                               DEFAULT 5,
    t-310                               T-310                               OPTIONAL,
    n-310                               N-310                               OPTIONAL,
    t-311                               T-311                               OPTIONAL,
    t-313                               T-313                               DEFAULT 3,
    n-313                               N-313                               DEFAULT s20,
    t-314                               T-314                               DEFAULT s12,
    t-315                               T-315                               DEFAULT s180,
    n-315                               N-315                               DEFAULT s1
}

UE-IdleTimersAndConstants ::=       SEQUENCE {
    t-300                               T-300,
    n-300                               N-300,
    t-312                               T-312,
    n-312                               N-312
}

UE-MultiModeRAT-Capability ::=      SEQUENCE {
    multiRAT-CapabilityList             MultiRAT-Capability,
    multiModeCapability                 MultiModeCapability
```

```
}

UE-PowerClass ::=                   INTEGER (1..4)

UE-RadioAccessCapability ::=        SEQUENCE {
    ics-Version                         ICS-Version,
    pdcp-Capability                     PDCP-Capability,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability,
    physicalChannelCapability           PhysicalChannelCapability,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    lcs-Capability                      LCS-Capability,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            measurementCapability               MeasurementCapability
        },
        tdd                                 NULL
    }
}

UL-PhysChCapabilityFDD ::=          SEQUENCE {
    maxNoDPDCH-BitsTransmitted          MaxNoDPDCH-BitsTransmitted,
    supportOfPCPCH                      BOOLEAN
}

UL-PhysChCapabilityTDD ::=          SEQUENCE {
    maxSimultaneousCCTrCH-Count         MaxSimultaneousCCTrCH-Count,
    maxTS-PerFrame                      MaxTS-PerFrame,
    maxPhysChPerTimeslot                MaxPhysChPerTimeslot,
    minimumSF                           MinimumSF-UL,
    supportOfPUSCH                      BOOLEAN
}

UL-TransChCapability ::=            SEQUENCE {
    maxNoBitsTransmitted                MaxNoBits,
    maxConvCodeBitsTransmitted          MaxNoBits,
    turboDecodingSupport                TurboSupport,
    maxSimultaneousTransChs             MaxSimultaneousTransChsUL,
    maxTransmittedBlocks                MaxTransportBlocksUL,
    maxNumberOfTFC-InTFCS               MaxNumberOfTFC-InTFCS-UL,
    maxNumberOfTF                       MaxNumberOfTF
}

URA-UpdateCause ::=                 ENUMERATED {
                                        changeOfURA,
                                        periodicURAUpdate,
                                        re-enteredServiceArea,
                                        spare1, spare2, spare3,
                                        spare4, spare5 }

UTRAN-DRX-CycleLengthCoefficient ::= INTEGER (3..12)

WaitTime ::=                        INTEGER (0..15)

END
```

11.3.8 Other information elements

```
Other-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CN-DomainSysInfoList,
    NAS-SystemInformationGSM-MAP,
    PLMN-Type
FROM CoreNetwork-IEs

    CellAccessRestriction,
    CellIdentity,
    CellSelectReselectInfoSIB-3-4,
    URA-IdentityList
FROM UTRANMobility-IEs

    CapabilityUpdateRequirement,
```

```
    CPCH-Parameters,
    DRAC-SysInfoList,
    ProtocolErrorCause,
    UE-ConnTimersAndConstants,
    UE-DCHTimersAndConstants,
    UE-IdleTimersAndConstants
FROM UserEquipment-IEs

    PredefinedConfigIdentity,
    PredefinedConfigValueTag,
    PreDefRadioConfiguration
FROM RadioBearer-IEs

    AICH-PowerOffset,
    ConstantValue,
    CPCH-PersistenceLevelsList,
    CPCH-SetInfoList,
    CSICH-PowerOffset,
    DynamicPersistenceLevelList,
    IndividualTS-InterferenceList,
    MidambleConfiguration,
    PDSCH-SysInfoList,
    PUSCH-SysInfoList-SFN,
    PICH-PowerOffset,
    PRACH-SystemInformationList,
    PrimaryCCPCH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-SysInfoList,
    PUSCH-SysInfoList-SFN,
    SCCPCH-SystemInformationList,
    UL-Interference
FROM PhysicalChannel-IEs

    FACH-MeasurementOccasionInfo,
    LCS-Alma-SIB-DataList,
    LCS-DGPS-SIB-Data,
    LCS-Ephe-SIB-Data,
    LCS-Cipher-GPS-Data-Indicator,
    LCS-OTDOA-AssistanceSIB,
    MeasurementControlSysInfo
FROM Measurement-IEs

    ANSI-41-GlobalServiceRedirectInfo,
    ANSI-41-PrivateNeighborListInfo,
    ANSI-41-RAND-Information,
    ANSI-41-UserZoneID-Information
FROM ANSI-41-IEs

    maxInterSysMessages,
    maxSIB,
    maxSIB-FACH
FROM Constant-definitions;

BCC ::=                             INTEGER (0..7)

BCCH-ModificationInfo ::=           SEQUENCE {
    mib-ValueTag                        MIB-ValueTag,
    bcch-ModificationTime               BCCH-ModificationTime               OPTIONAL
}


-- Actual value = IE value * 8
BCCH-ModificationTime ::=           INTEGER (0..511)

BSIC ::=                            SEQUENCE {
    ncc                                 NCC,
    bcc                                 BCC
}

CBS-DRX-Level1Information ::=       SEQUENCE {
    ctch-AllocationPeriod               INTEGER (1..256),
    cbs-FrameOffset                     INTEGER (0..255)
}

CDMA2000-Message ::=                SEQUENCE {
    msg-Type                            BIT STRING (SIZE (8)),
    payload                             BIT STRING (SIZE (1..512))
}
```

```
CDMA2000-MessageList ::=            SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        CDMA2000-Message

CellValueTag ::=                    INTEGER (1..4)

GSM-MessageList ::=                 SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..512))

InterSystemHO-Failure ::=           SEQUENCE {
    interSystemHO-FailureCause          InterSystemHO-FailureCause          OPTIONAL,
    interSystemMessage                  InterSystemMessage                  OPTIONAL
}

InterSystemHO-FailureCause ::=      CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    unspecified                         NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

InterSystemMessage ::=              CHOICE {
    gsm                                 SEQUENCE {
        gsm-MessageList                     GSM-MessageList
    },
    cdma2000                            SEQUENCE {
        cdma2000-MessageList                CDMA2000-MessageList
    },
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL,
    spare5                              NULL,
    spare6                              NULL
}

MasterInformationBlock ::=          SEQUENCE {
        mib-ValueTag                    MIB-ValueTag,
        plmn-Type                       PLMN-Type,
        -- TABULAR: The PLMN identity and ANSI-41 core network information
        -- are included in PLMN-Type.
        sibSb-ReferenceList             SIBSb-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

MIB-ValueTag ::=                    INTEGER (1..8)

NCC ::=                             INTEGER (0..7)

PLMN-ValueTag ::=                   INTEGER (1..256)


PredefinedConfigIdentityAndValueTag ::= SEQUENCE {
    predefinedConfigIdentity            PredefinedConfigIdentity,
    predefinedConfigValueTag            PredefinedConfigValueTag
}

ProtocolErrorInformation ::=        SEQUENCE {
    diagnosticsType                     CHOICE {
        type1                               SEQUENCE {
            protocolErrorCause                  ProtocolErrorCause
        },
        spare                               NULL
    }
}


SchedulingInformation ::=           SEQUENCE {
    sib-Type                            SIB-TypeAndTag,
    scheduling                          SEQUENCE {
        segCount                            SegCount                        DEFAULT 1,
        sib-Pos                             CHOICE {
            -- The element name indicates the repetition period and the value
            -- (multiplied by two) indicates the position of the first segment.
```

```
            rep4                                INTEGER (0..1),
            rep8                                INTEGER (0..3),
            rep16                               INTEGER (0..7),
            rep32                               INTEGER (0..15),
            rep64                               INTEGER (0..31),
            rep128                              INTEGER (0..63),
            rep256                              INTEGER (0..127),
            rep512                              INTEGER (0..255),
            rep1024                             INTEGER (0..511),
            rep2048                             INTEGER (0..1023),
            rep4096                             INTEGER (0..2047)
        },
        sib-PosOffsetInfo                   SibOFF-List                     OPTIONAL
    }                                                                       OPTIONAL
}
SchedulingInformationSIB ::=            SEQUENCE {
    sib-Type                            SIB-TypeAndTag,
    scheduling                          SchedulingInformation
}

SchedulingInformationSIBSb ::=          SEQUENCE {
    sibSb-Type                          SIBSb-TypeAndTag,
    scheduling                          SchedulingInformation
}

SegCount ::=                        INTEGER (1..16)

SegmentIndex ::=                    INTEGER (10..15)

-- Actual value = 2 * IE value
SFN-Prime ::=                       INTEGER (0..2047)


SIB-Data-fixed ::=                  BIT STRING (SIZE (222))


SIB-Data-variable ::=               BIT STRING (SIZE (1..214))

SIB-ReferenceList ::=               SEQUENCE (SIZE (1..maxSIB)) OF
                                        SchedulingInformationSIB

SIBSb-ReferenceList ::=             SEQUENCE (SIZE (1..maxSIB)) OF
                                        SchedulingInformationSIBSb

SIB-ReferenceListFACH ::=           SEQUENCE (SIZE (1..maxSIB-FACH)) OF
                                        SchedulingInformationSIB

SIB-Type ::=                        ENUMERATED {
                                        masterInformationBlock,
                                        systemInformationBlockType1,
                                        systemInformationBlockType2,
                                        systemInformationBlockType3,
                                        systemInformationBlockType4,
                                        systemInformationBlockType5,
                                        systemInformationBlockType6,
                                        systemInformationBlockType7,
                                        systemInformationBlockType8,
                                        systemInformationBlockType9,
                                        systemInformationBlockType10,
                                        systemInformationBlockType11,
                                        systemInformationBlockType12,
                                        systemInformationBlockType13,
                                        systemInformationBlockType13-1,
                                        systemInformationBlockType13-2,
                                        systemInformationBlockType13-3,
                                        systemInformationBlockType13-4,
                                        systemInformationBlockType14,
                                        systemInformationBlockType15,
                                        systemInformationBlockType15-1,
                                        systemInformationBlockType15-2,
                                        systemInformationBlockType15-3,
                                        systemInformationBlockType16,
                                        systemInformationBlockType17,
                                        schedulingBlockType1,
                                        schedulingBlockType2,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7 }
```

```
SIB-TypeAndTag ::=                  CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        PLMN-ValueTag,
    sysInfoType3                        CellValueTag,
    sysInfoType4                        CellValueTag,
    sysInfoType5                        CellValueTag,
    sysInfoType6                        CellValueTag,
    sysInfoType7                        NULL,
    sysInfoType8                        CellValueTag,
    sysInfoType9                        NULL,
    sysInfoType10                       NULL,
    sysInfoType11                       CellValueTag,
    sysInfoType12                       CellValueTag,
    sysInfoType13                       CellValueTag,
    sysInfoType13-1                     CellValueTag,
    sysInfoType13-2                     CellValueTag,
    sysInfoType13-3                     CellValueTag,
    sysInfoType13-4                     CellValueTag,
    sysInfoType14                       NULL,
    sysInfoType15                       CellValueTag,
    sysInfoType16                       PredefinedConfigIdentityAndValueTag,
    sysInfoType17                       NULL
}
SIBSb-TypeAndTag ::=                    CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        PLMN-ValueTag,
    sysInfoType3                        CellValueTag,
    sysInfoType4                        CellValueTag,
    sysInfoType5                        CellValueTag,
    sysInfoType6                        CellValueTag,
    sysInfoType7                        NULL,
    sysInfoType8                        CellValueTag,
    sysInfoType9                        NULL,
    sysInfoType10                       NULL,
    sysInfoType11                       CellValueTag,
    sysInfoType12                       CellValueTag,
    sysInfoType13                       CellValueTag,
    sysInfoType13-1                     CellValueTag,
    sysInfoType13-2                     CellValueTag,
    sysInfoType13-3                     CellValueTag,
    sysInfoType13-4                     CellValueTag,
    sysInfoType14                       NULL,
    sysInfoType15                       CellValueTag,
    sysInfoType16                       PredefinedConfigIdentityAndValueTag,
    sysInfoType17                       NULL,
    sysInfoTypeSB1                      CellValueTag,
    sysInfoTypeSB2                      CellValueTag,
}

SibOFF ::=                          ENUMERATED {
                                        so2, so4, so6, so8, so10,
                                        so12, so14, so16, so18,
                                        so20, so22, so24, so26,
                                        so28, so30, so32 }

SibOFF-List ::=                     SEQUENCE (SIZE (1..15)) OF
                                        SibOFF


SysInfoType1 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList               OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants,
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants,
        ue-DCHTimersAndConstants        UE-DCHTimersAndConstants,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType2 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList               OPTIONAL,
    -- UTRAN mobility IEs
```

```
        ura-IdentityList                URA-IdentityList,
    -- User equipment IEs
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType3 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
        sib4indicator                   BOOLEAN,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType4 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType5 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
        sib6indicator                   BOOLEAN,
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                pich-PowerOffset                PICH-PowerOffset,
                aich-PowerOffset                AICH-PowerOffset
            },
            tdd                             SEQUENCE {
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                midambleConfiguration           MidambleConfiguration       OPTIONAL,
                primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power       OPTIONAL,
                prach-ConstantValue             ConstantValue               OPTIONAL,
                dpch-ConstantValue              ConstantValue               OPTIONAL,
                pusch-ConstantValue             ConstantValue               OPTIONAL
    }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType6 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                pich-PowerOffset                PICH-PowerOffset,
                aich-PowerOffset                AICH-PowerOffset,
                csich-PowerOffset               CSICH-PowerOffset           OPTIONAL
            },
            tdd                             SEQUENCE {
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                midambleConfiguration           MidambleConfiguration       OPTIONAL,
```

```
                primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power       OPTIONAL,
                prach-ConstantValue             ConstantValue               OPTIONAL,
                dpch-ConstantValue              ConstantValue               OPTIONAL,
                pusch-ConstantValue             ConstantValue               OPTIONAL
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType7 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                ul-Interference                 UL-Interference
            },
            tdd                             NULL
        },
        prach-Information-SIB5-List     DynamicPersistenceLevelList,
        prach-Information-SIB6-List     DynamicPersistenceLevelList         OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType8 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- User equipment IEs
        cpch-Parameters                 CPCH-Parameters,
    -- Physical channel IEs
        cpch-SetInfoList                CPCH-SetInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType9 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        cpch-PersistenceLevelsList      CPCH-PersistenceLevelsList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType10 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- User equipment IEs
        drac-SysInfoList                DRAC-SysInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType11 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
        sib12indicator                  BOOLEAN,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType12 ::=                   SEQUENCE {
    -- Other IEs
```

```
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Core network IEs
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants           OPTIONAL,
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-1 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-RAND-Information        ANSI-41-RAND-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-2 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-UserZoneID-Information  ANSI-41-UserZoneID-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-3 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-PrivateNeighborListInfo ANSI-41-PrivateNeighborListInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-4 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-GlobalServiceRedirectInfo
                                        ANSI-41-GlobalServiceRedirectInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}


SysInfoType14 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        individualTS-InterferenceList   IndividualTS-InterferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Measurement IEs
        lcs-GPS-Assistance              LCS-Cipher-GPS-Data-Indicator               OPTIONAL,
        lcs-OTDOA-Assistance            LCS-OTDOA-AssistanceSIB             OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15-1 ::=                 SEQUENCE {
    -- DGPS corrections
        lcs-DGPS-SIB-Data               LCS-DGPS-SIB-Data
}

SysInfoType15-2 ::=                 SEQUENCE {
-- Ephemeris and clock corrections
    lcs-Ephe-SIB-Data               LCS-Ephe-SIB-Data
}
```

```
SysInfoType15-3 ::=                 SEQUENCE {
    -- Almanac and other data
        transmissionTOW                 INTEGER (0..1048575),
        satMask                         BIT STRING (SIZE (1..32)),
        lsbTOW                          BIT STRING (SIZE (8)),
        lcs-Alma-SIB-DataList           LCS-Alma-SIB-DataList
}


SysInfoType16 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Radio bearer IEs
        preDefinedRadioConfiguration    PreDefRadioConfiguration,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType17 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        pusch-SysInfoList               PUSCH-SysInfoList-SFN               OPTIONAL,
        pdsch-SysInfoList               PDSCH-SysInfoList-SFN               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoTypeSB1 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoTypeSB2 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

END
```

13.4.17 VALUE_TAG

This variable contains information about the value tag for the last received system information block of a given type, for all system information blocks using value tags.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB value tag	MP		MIB value tag 10.3.8.7	Value tag for the master information block
SB 1 value tag	MP		Cell value tag 10.3.8.4	Value tag for the scheduling block type 1
SB 2 value tag	MP		Cell value tag 10.3.8.4	Value tag for the scheduling block type 2
SIB 1 value tag	CV-*GSM*		PLMN value tag 10.3.8.8	Value tag for the system information block type 1
SIB 2 value tag	MP		~~PLMN~~ Cell value tag 10.3.8.~~4~~8	Value tag for the system information block type 2
SIB 3 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 3
SIB 4 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 4
SIB 5 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 5
SIB 6 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 6
CHOICE *mode*				
>FDD				
>>SIB 8 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 8
>TDD				(no data)
SIB 11 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 11
SIB 12 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 12
SIB 13 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13
SIB 13.1 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.1
SIB 13.2 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.2
SIB 13.3 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.3
SIB 13.4 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.4
CHOICE *mode*				
> TDD				
>>SIB 14 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 14
> FDD				(no data)
SIB 15 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15
SIB 16 value tag	MP		PLMN value tag 10.3.8.8	Value tag for the system information block type 16

Condition	Explanation
GSM	This information is only stored when the PLMN Type in the variable SELECTED_PLMN is "GSM-MAP".
ANSI	This information is only stored when the PLMN Type in the variable SELECTED_PLMN is "ANSI-41".