

TSG-RAN Meeting #8
Düsseldorf, Germany, 21 – 23 June 2000

RP-000223

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
R2-000925	agreed	25.331	294	1	RLC reconfiguration indicator	B	3.2.0	3.3.0
R2-001208	agreed	25.331	296	3	RLC Info	C	3.2.0	3.3.0
R2-000979	agreed	25.331	297	1	Usage of Transport CH ID	C	3.2.0	3.3.0
R2-001048	agreed	25.331	298	2	Transport format combination set	C	3.2.0	3.3.0
R2-000934	agreed	25.331	300	1	Usage of U-RNTI and C-RNTI in DL DCCH message	F	3.2.0	3.3.0
R2-000753	agreed	25.331	301		Description of Cell Update Procedure	C	3.2.0	3.3.0
R2-000980	agreed	25.331	304	1	System information modification procedure	F	3.2.0	3.3.0
R2-000772	agreed	25.331	305		Functional descriptions of the RRC messages	D	3.2.0	3.3.0
R2-000773	agreed	25.331	306		Clarification of CTFC calculation	F	3.2.0	3.3.0
R2-001213	agreed	25.331	307	3	Compressed mode parameters	C	3.2.0	3.3.0
R2-001209	agreed	25.331	309	2	Signalling procedure for periodic local authentication	B	3.2.0	3.3.0
R2-001274	agreed	25.331	310	5	Editorial corrections on security	F	3.2.0	3.3.0
R2-000984	agreed	25.331	311	2	Security capability	D	3.2.0	3.3.0
R2-000899	agreed	25.331	312	1	Corrections on ASN.1 definitions	F	3.2.0	3.3.0
R2-001126	agreed	25.331	313	2	DRX cycle lower limit	F	3.2.0	3.3.0
R2-000988	agreed	25.331	314	1	Removal of CPICH SIR measurement quantity	C	3.2.0	3.3.0
R2-000986	agreed	25.331	315	1	Signalling connection release request	B	3.2.0	3.3.0
R2-000987	agreed	25.331	318	1	Change to IMEI coding from BCD to hexadecimal	C	3.2.0	3.3.0
R2-000902	agreed	25.331	319	1	Removal of RLC sequence numbers from RRC initialisation information	F	3.2.0	3.3.0
R2-000989	agreed	25.331	320	3	Addition of the length of PDCP sequence numbers into PDCP info	B	3.2.0	3.3.0

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

TS25.331 CR 250r1

Current Version: 3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG-RAN #8**

list expected approval meeting # here ↑

for approval
for information

strategic (for SMG use only)
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 UTRAN / Radio Core Network

Source:

NTT DoCoMo TSG-RAN WG2

Date:

2000-4-10

Subject:

RLC reconfiguration indicator

Work item:

Category:

(only one category shall be marked with an X)

F Correction
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
Release 00

Reason for change:

It is defined in TS25.331 v3.2.0 that when RLC unrecoverable error (Amount of the retransmission of RESET PDU reaches the value of Max DAT and receives no ACK) occurs on Common CH, the RLC is re-established by "Cell Update" procedure. However, an RLC unrecoverable error recovery procedure on dedicated CH is not currently defined. Therefore, it is proposed to use RRC CONNECTION REESTABLISHMENT procedure to recover from the RLC unrecoverable error on dedicated CH by adding the IE "AM_RLC error indication" and "RLC reset indicator".

"RLC reconfiguration indicator" is changed to "RLC reset indicator".

Clauses affected:

8.1.5.2, 8.1.5.4, 8.3.1.1, 8.3.1.2, 8.3.1.4, 8.3.1.5, 10.2.4, 10.2.5, 10.2.35, 10.2.37, 8.3.410.3.3.36, 11.2, 11.3.3

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.

8.1.5.2. Initiation

When a UE loses the radio connection due to e.g. radio link failure (see 8.5.6), detection of RLC unrecoverable error (amount of the retransmission of RESET PDU reaches the value of Max DAT and receives no ACK) in CELL_DCH state, the UE may initiate a new cell selection by transiting to CELL_FACH state.

If timer T314=0 and timer T315=0 the UE shall:

- Enter idle mode. The procedure ends and a connection failure may be indicated 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

If timer T314=0 the UE shall:

- Release locally all radio bearers (except Signalling Radio Bearers) using Tr or UM RLC. An indication may be sent to the non-access stratum.

If timer T315=0 the UE shall:

- Release locally all radio bearers (except Signalling Radio Bearers) using AM RLC. An indication may be sent to the non-access stratum.

If T314>0, the UE shall start timer T314.

If T315>0, the UE shall start timer T315.

Upon initiation of the procedure, the UE shall set the variable PROTOCOL_ERROR_INDICATOR to FALSE.

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

8.1.5.4. Reception of an RRC CONNECTION RE-ESTABLISHMENT REQUEST message by the UTRAN

UTRAN may either:

- initiate the RRC connection re-establishment procedure and transmit an RRC CONNECTION RE-ESTABLISHMENT message on the downlink DCCH on FACH; or

initiate the RRC connection release procedure in CELL_FACH state.

When the UTRAN detects AM_RLC unrecoverable error (amount of the retransmission of RESET PDU reaches the value of Max DAT and receives no ACK), it waits for RRC CONNECTION RE-ESTABLISHMENT REQUEST message from the UE and when the UTRAN receives it, UTRAN commands the UE to reset AM_RLC by sending RRC CONNECTION RE-ESTABLISHMENT message.

10.2.35 RRC CONNECTION RE-ESTABLISHMENT

NOTE: Functional description of this message to be included here.

RLC-SAP: UM

Logical channel: CCCH, DCCH

Direction: UTRAN → UE

Information Element	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 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
RLC reset indicator (for C-plane)	MP		RLC reset indicator 10.3.3.36	
RLC reset indicator (for U-plane)	MP		RLC reset indicator 10.3.3.36	
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
Signalling RB information to setup list	OP	1 to <MaxSRBcount>		For each signalling radio bearer established
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
RAB information for setup list	OP	1 to		For each RAB established

Information Element	Need	Multi	Type and reference	Semantics description
		<MaxRABcount>		
>RAB information for setup	MP		RAB information for setup 10.3.4.9	
RB information to release list	OP	1 to <MaxRelRBcount>		
>RB information to release	MP		RB information to release 10.3.4.14	
RB information to reconfigure list	OP	1 to <MaxReconfRBcount>		
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.13	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconfAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information	

Information Element	Need	Multi	Type and reference	Semantics description
			10.3.5.8	
>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 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP		Uplink DPCH info 10.3.6.65	At least one spare choice (criticality = reject) required
>Uplink DPCH info			PRACH Info (for RACH) 10.3.6.36	
>PRACH Info (for RACH)				
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each	

Information Element	Need	Multi	Type and reference	Semantics description
			radio link 10.3.6.18	

10.2.37 RRC CONNECTION RE-ESTABLISHMENT REQUEST

NOTE: Functional description of this message to be included here.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
U-RNTI	MP		U-RNTI 10.3.3.45	
Integrity check info	CH		Integrity check info 10.3.3.16	
AM_RLC error indication(for C-plane)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error occurred on c-plane in the UE
AM_RLC error indication(for U-plane)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error occurred on u-plane in the UE
Protocol error indicator	MD		Protocol error indicator 10.3.3.29	Default value is FALSE
Measurement information elements				
Measured results on RACH	OP		Measured results on RACH 10.3.7.70	
Other information elements				
Protocol error information	<i>CV-ProtErr</i>		Protocol error information 10.3.8.9	

8.3.1 Cell update

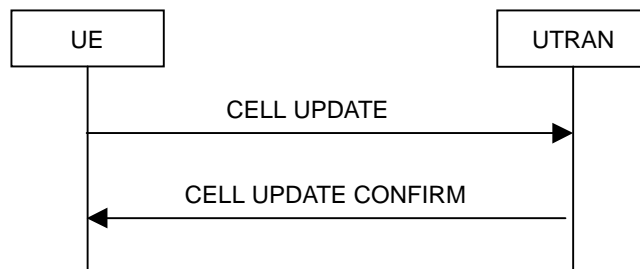


Figure 33: Cell update procedure, basic flow

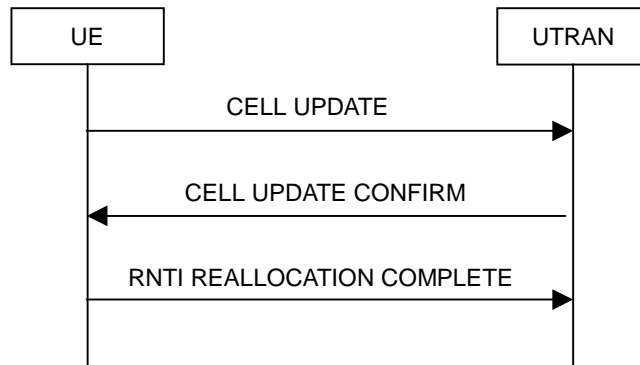


Figure 34: Cell update procedure with RNTI reallocation

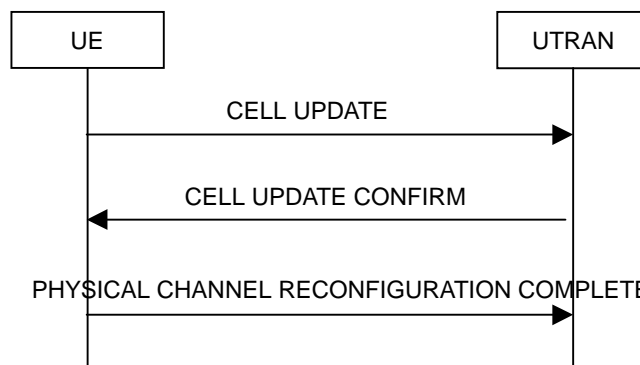


Figure 35: Cell update procedure with physical channel reconfiguration

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. It may also be used for supervision of the RRC connection, even if no cell reselection takes place. The cell update procedure can also be used to ~~re-configure~~ ~~reset~~ 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 (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_ (see note).

NOTE: PHYSICAL 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 may apply the cell update procedure for a number of purposes. The specific requirements the UE shall take into account for each case are specified in the following:

- Upon initiation of the procedure, the UE shall set the variable `PROTOCOL_ERROR_INDICATOR` to `FALSE`.
- In CELL_FACH or CELL_PCH state, the UE shall perform the cell update procedure when selecting another cell (cell reselection).
- In CELL_FACH and CELL_PCH state, the UE shall perform the cell update procedure upon expiry of T305 while the UE is in the service area. The UE shall only perform this periodic cell updating if configured by means of the IE "Information for periodical cell and URA update" in System Information Block Type 2. The UE shall initially start timer T305 upon entering CELL_FACH or CELL_PCH state.
- In CELL_PCH state and URA_PCH state, the UE shall initiate the cell update procedure if it wants to transmit UL data.
- In CELL_PCH and URA_PCH state, the UE shall perform the cell update procedure when receiving a PAGING TYPE 1 message as in subclause 8.1.2.3.

- moving to CELL_FACH state, if not already in that state.
- delete any C-RNTI and suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.
- sending a CELL UPDATE message on the uplink CCCH.
- starting timer T302 and resetting counter V302.

The IE "cell update cause" shall be used as follows:

- In case of cell reselection: "cell reselection";
- In case of periodic cell updating: "periodic cell update";
- In case of UL data transmission: "UL data transmission";
- In case of paging response: "paging response".

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.

The IE "AM_RLC error indication" shall be set when 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 IE "AM_RLC error indication \(for u-plane\)" shall be set when the UE detects unrecoverable error in an AM RLC entity \(for u-plane\) for for u-plane link.](#)

The UE shall include an intra-frequency measurement report in the CELL UPDATE message, 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.

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 that is specified in subclause 8.5.5, the UE shall

- start timer T307;
- search for cell to camp.

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 a 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 should transmit a CELL UPDATE CONFIRM message on the downlink DCCH.

When the UTRAN detects AM_RLC ~~error~~ unrecoverable error (Amount of the retransmission of RESET PDU reaches the value of Max DAT and receives no ACK), it waits for CELL UPDATE message from the UE and when the UTRAN receives it, UTRAN commands the UE to ~~re-configure~~ 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-configure~~ 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.

8.3.1.5 Reception of the CELL UPDATE CONFIRM message by the UE

Upon receiving the CELL UPDATE CONFIRM message, the UE shall stop timer T302.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the CELL UPDATE CONFIRM message includes the IE "CN domain identity" and the IE "NAS system information", the UE shall forward the content of the IE "NAS system information" to the non-access stratum entity of the UE identified by the IE "CN domain identity".

If the CELL UPDATE CONFIRM message includes the IE "URA-Id" the UE shall store this URA identity.

If the CELL UPDATE CONFIRM message does not include IE "new C-RNTI", IE "new U-RNTI", IE "PRACH info" nor IE "Secondary CCPCH info", no RRC response message is sent to the UTRAN.

If the CELL UPDATE CONFIRM message includes the IE "new C-RNTI" and optionally the IE "new U-RNTI" but does not include IE "PRACH info" or IE "Secondary CCPCH info", the UE shall update its identities and transmit an RNTI REALLOCATION COMPLETE message on the uplink DCCH using the PRACH indicated in the broadcast system information.

If the CELL UPDATE CONFIRM message includes the IE "RLC ~~reset~~ re-configuration indicator (for C-plane)" the UE shall ~~reconfigure~~ reset the AM RLC entities on C-plane.

If the CELL UPDATE CONFIRM message includes the IE "RLC ~~reset~~ re-configuration indicator (for U-plane)" the UE shall ~~reconfigure~~ reset the AM RLC entities on U-plane.

If the CELL UPDATE CONFIRM message includes the IE "PRACH info" and/or the IE "Secondary CCPCH info", the UE shall

- Perform the actions stated in subclauses 8.5.7.6.2 and 8.5.7.6.3.
- update its identities if the CELL UPDATE CONFIRM message includes the IE "new C-RNTI" and optionally the IE "new U-RNTI".
- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using the PRACH indicated in CELL UPDATE CONFIRM message.

The UE shall enter a state according to subclause 8.5.8 applied on the CELL UPDATE CONFIRM message, unless specified otherwise below.

If the IE "Cell update cause" in CELL UPDATE message was set to "UL data transmission" or "paging response", the UE shall remain in CELL_FACH state.

If the IE "Cell update cause" in CELL UPDATE message was set to "periodic cell update" or "cell reselection", the UE shall return to the state it was in before initiating the cell update procedure.

In case none of the above conditions apply, the UE shall return to the state it was in before initiating the cell update procedure.

In case the UE ends in CELL_FACH or CELL_PCH state and periodic cell updating is configured, it shall reset timer T305.

In case the UE does not end in CELL_FACH state, it shall delete its C-RNTI.

If the UE remains in CELL_FACH state and the CELL UPDATE CONFIRM message includes the IE "New C-RNTI" the UE shall then resume data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

8.3.1.6 Invalid CELL UPDATE CONFIRM message

If the UE receives an CELL UPDATE CONFIRM 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:

The UE shall check the value of `V302` and

- If `V302` is smaller or equal than `N302`, the UE shall set the variable `PROTOCOL_ERROR_INDICATOR` to `TRUE`, retransmit a CELL UPDATE message on the uplink CCCH, restart timer `T302` and increase counter `V302`. The IE "Cell update cause" shall be set to the event causing the transmission of the CELL UPDATE message, see subclause 8.3.1.2.
- If `V302` is greater than `N302`, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated 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.

8.3.1.7 T302 expiry or cell reselection

- Upon expiry of timer `T302`; and/or
- upon reselection of another UTRA cell when waiting for the CELL UPDATE CONFIRM message,

the UE shall check the value of `V302` and:

- If `V302` is smaller or equal than `N302`, the UE shall retransmit a CELL UPDATE message on the uplink CCCH, restart timer `T302` and increase counter `V302`. The IE "Cell update cause" shall be set to the event causing the transmission of the CELL UPDATE message, see subclause 8.3.1.2.
- If `V302` is greater than `N302`, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated 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

8.3.1.8 Reception of the RNTI REALLOCATION COMPLETE message by the UTRAN

See subclause 8.3.3.4.

8.3.1.9 Reception of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message by the UTRAN

When the UTRAN receives PHYSICAL CHANNEL RECONFIGURATION message, the procedure ends.

10.2.4 CELL UPDATE

This message is used by the UE to initiate a cell update procedure.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
U-RNTI	MP		U-RNTI 10.3.3.45	
Integrity check info	CH		Integrity check info 10.3.3.16	
AM_RLC error indication(for c-plane)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error occurred on c-plane in the UE
AM_RLC error indication(for u-plane)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error occurred on u-plane in the UE
Cell update cause	MP		Cell update cause 10.3.3.3	
Protocol error indicator	MD		Protocol error indicator 10.3.3.29	Default value is FALSE
Measurement information elements				
Measured results on RACH	OP		Measured results on RACH 10.3.7.70	
Other information elements				
Protocol error information	<i>CV-ProtErr</i>		Protocol error information 10.3.8.9	

Condition	Explanation
<i>ProtErr</i>	If the IE "Protocol error indicator" has the value "TRUE"

10.2.5 CELL UPDATE CONFIRM

This message confirms the cell update procedure and can be used to reallocate new RNTI information for the UE valid in the new cell.

RLC-SAP: UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		DRX cycle length coefficient 10.3.3.9	Default value is the existing DRX cycle length coefficient
RLC reset-re-configuration indicator (for C-plane)	MD		RLC reset-re-configuration indicator 10.3.3.36	Default value is the existing RLC re-configuration indicator for C-plane
RLC reset-re-configuration indicator (for U-plane)	MD		RLC reset-re-configuration indicator 10.3.3.36	Default value is the existing RLC re-configuration indicator for U-plane
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
UTRAN Information Elements				
URA identity	OP		URA identity 10.3.2.5	
RB information elements				
RB with PDCP information list	OP	1 to <MaxRBWithPDCPCount>		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 10.3.4.17	
PhyCH information elements				
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power

Information Element	Need	Multi	Type and reference	Semantics description
PRACH Info (for RACH)	OP		PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information for one radio link	OP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
<i>MaxRBWithPDCPCount</i>	Maximum number of radio bearers which can have PDCP entity configured

10.3.3.36 RLC ~~re-configuration~~ reset indicator

This IE is used to ~~re-configure~~ reset AM RLC on c-plane and u-plane.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RLC re-configuration <u>reset</u> indicator	MP		Boolean	TRUE means <u>reconfiguration</u> reset required FALSE means reset not <u>required</u>

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-CycleLengthCoefficient,
DRX-Indicator,
EstablishmentCause,
FailureCauseWithProtErr,
HyperFrameNumber,
InitialUE-Capability,
InitialUE-Identity,
IntegrityProtActivationInfo,
IntegrityProtectionModeInfo,
PagingCause,
PagingRecordList,
ProtocolErrorIndicator,
ProtocolErrorIndicatorWithInfo,
Re-EstablishmentTimer,
RedirectionInfo,
RejectionCause,
ReleaseCause,
~~RLC-ReconfigurationIndicator~~RLC-ResetIndicator,
RRC-MessageTX-Count,
U-RNTI,
U-RNTI-Short,
UE-RadioAccessCapability,
URA-UpdateCause,
WaitTime

FROM UserEquipment-IEs

PredefinedConfigIdentity,
RAB-Info,
RAB-InformationSetupList,
RB-ActivationTimeInfo,
RB-ActivationTimeInfoList,
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,
UL-AddReconfTransChInfoList,
UL-CommonTransChInfo,
UL-DeletedTransChInfoList

FROM TransportChannel-IEs

AllocationPeriodInfo,
CCTrCH-PowerControlInfo,
ConstantValue,
CPCH-SetInfo,
DL-CommonInformation,
DL-InfoPerRL-List,
DL-InformationPerRL,
DL-InformationPerRL-List,
DL-DPCH-InfoCommon,
DL-DPCH-PowerControlInfo,
DL-OuterLoopControl,
DL-PDSCH-Information,
FrequencyInfo,
IndividualTS-InterferenceList,
MaxAllowedUL-TX-Power,
PDSCH-Info,
PRACH-RACH-Info,
PrimaryCCPCH-TX-Power,
PUSCH-Info,
RL-AdditionInformationList,
RL-RemovalInformationList,
UL-DPCH-InfoShort,


```

SSDT-Information,
TFC-ControlDuration,
TimeslotList,
TX-DiversityMode,
UL-ChannelRequirement,
UL-DPCH-Info,
UL-DPCH-InfoHO,
UL-Interference,
UL-TimingAdvance
FROM PhysicalChannel-IEs

```

```

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

```

```

BCCH-ModificationInfo,
InterSystemHO-Failure,
InterSystemMessage,
ProtocolErrorInformation,
SegCount,
SegmentIndex,
SFN-Prime,
SIB-Content,
SIB-Data,
SIB-Type
FROM Other-IEs;

```

```

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

```

```

ActiveSetUpdate ::= 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,
  -- Extension mechanism
  non-Release99-Information       SEQUENCE {}                     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
  non-Release99-Information       SEQUENCE {}                     OPTIONAL
}

```

```

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

ActiveSetUpdateFailure ::= SEQUENCE {
    -- User equipment IEs
    failureCause          FailureCauseWithProtErr,
    -- Extension mechanism
    non-Release99-Information SEQUENCE {} OPTIONAL
}

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

CellUpdate ::= SEQUENCE {
    -- User equipment IEs
    u-RNTI                U-RNTI,
    cPAm-RLC-ErrorIndication    BOOLEAN,
    uPAM-RLC-ErrorIndication    BOOLEAN,
    cellUpdateCause       CellUpdateCause,
    protocolErrorIndicator ProtocolErrorIndicatorWithInfo,
    -- TABULAR: Protocol error information is nested in
    -- ProtocolErrorIndicatorWithInfo.
    -- Measurement IEs
    measuredResultsOnRACH MeasuredResultsOnRACH OPTIONAL,
    -- Extension mechanism
    non-Release99-Information SEQUENCE {} OPTIONAL
}

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

CellUpdateConfirm ::= 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 DRX-CycleLengthCoefficient OPTIONAL,
    rle-ReconfIndicatorC-Planerlc-ResetIndicatorC-Plane RLC-ReconfigurationIndicatorRLC-
ResetIndicator,
    rle-ReconfIndicatorU-Planerlc-ResetIndicatorU-Plane RLC-ReconfigurationIndicatorRLC-
ResetIndicator,
    -- 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
    maxAllowedUL-TX-Power     MaxAllowedUL-TX-Power OPTIONAL,
    prach-RACH-Info           PRACH-RACH-Info OPTIONAL,
    dl-InformationPerRL       DL-InformationPerRL OPTIONAL,
    -- Extension mechanism
    non-Release99-Information SEQUENCE {} OPTIONAL
}

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

DownlinkDirectTransfer ::= SEQUENCE {
    -- Core network IEs
    cn-DomainIdentity         CN-DomainIdentity,
    nas-Message               NAS-Message,
    -- Extension mechanism
    non-Release99-Information SEQUENCE {} OPTIONAL
}

```

```

}

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

DownlinkOuterLoopControl ::= SEQUENCE {
  -- Physical channel IEs
  dl-OuterLoopControl          DL-OuterLoopControl,
  dl-DPCH-PowerControlInfo     DL-DPCH-PowerControlInfo      OPTIONAL,
  -- Extension mechanism
  non-Release99-Information    SEQUENCE {}                  OPTIONAL
}

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

HandoverToUTRANCommand ::= SEQUENCE {
  -- User equipment IEs
  new-U-RNTI                   U-RNTI-Short,
  activationTime                ActivationTime              OPTIONAL,
  cipheringAlgorithm           CipheringAlgorithm          OPTIONAL,
  -- Radio bearer IEs
  rab-Info                     RAB-Info,
  -- Specification mode information
  specificationMode            CHOICE {
    complete                    SEQUENCE {
      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-InfoHO,
      dl-CommonInformation     DL-CommonInformation,
      dl-PDSCH-Information     DL-PDSCH-Information      OPTIONAL,
      modeSpecificInfo        CHOICE {
        fdd                    SEQUENCE {
          cpch-SetInfo        CPCH-SetInfo      OPTIONAL
        },
        tdd                    NULL
      },
      dl-InformationPerRL-List  DL-InformationPerRL-List
    },
    preconfiguration           SEQUENCE {
      predefinedConfigIdentity  PredefinedConfigIdentity,
      ul-DPCH-Info             UL-DPCH-InfoShort,
      dl-DPCH-InfoCommon       DL-DPCH-InfoCommon,
      dl-InfoPerRL-List        DL-InfoPerRL-List
    }
  },
  -- Physical channel IEs
  frequencyInfo               FrequencyInfo,
  maxAllowedUL-TX-Power       MaxAllowedUL-TX-Power,
  modeSpecificPhysChInfo     CHOICE {
    fdd                        NULL,
    tdd                        SEQUENCE {
      primaryCCPCH-TX-Power    PrimaryCCPCH-TX-Power,
      constantValue            ConstantValue,
      ul-Interference          UL-Interference,
      cellParametersID         INTEGER (0..127)
    }
  },
  -- Extension mechanism
  non-Release99-Information    SEQUENCE {}                  OPTIONAL
}

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

```

```

HandoverToUTRANComplete ::= SEQUENCE {
  -- User equipment IEs
  integrityProtectionHFN          HyperFrameNumber,
  -- Extension mechanism
  non-Release99-Information       SEQUENCE {}           OPTIONAL
}

-- *****
--
-- 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
  non-Release99-Information       SEQUENCE {}           OPTIONAL
}

-- *****
--
-- INTER-SYSTEM HANDOVER COMMAND
--
-- *****

InterSystemHandoverCommand ::= SEQUENCE {
  -- User equipment IEs
  activationTime                  ActivationTime           OPTIONAL,
  -- Radio bearer IEs
  remainingRAB-Info               RAB-Info                OPTIONAL,
  -- Other IEs
  interSystemMessage              InterSystemMessage,
  -- Extension mechanism
  non-Release99-Information       SEQUENCE {}           OPTIONAL
}

-- *****
--
-- INTER-SYSTEM HANDOVER FAILURE
--
-- *****

InterSystemHandoverFailure ::= SEQUENCE {
  -- Other IEs
  interSystemHO-Failure           InterSystemHO-Failure   OPTIONAL,
  -- Extension mechanism
  non-Release99-Information       SEQUENCE {}           OPTIONAL
}

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

MeasurementControl ::= SEQUENCE {
  -- Measurement IEs
  measurementIdentityNumber       MeasurementIdentityNumber,
  measurementCommand               MeasurementCommand,
  -- TABULAR: The measurement type is included in MeasurementCommand.
  measurementReportingMode        MeasurementReportingMode   OPTIONAL,
  additionalMeasurementList        AdditionalMeasurementID-List   OPTIONAL,
  -- Extension mechanism
  non-Release99-Information       SEQUENCE {}           OPTIONAL
}

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

```

```

MeasurementControlFailure ::= SEQUENCE {
  -- User equipment IEs
  failureCause          FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information  SEQUENCE {}          OPTIONAL
}

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

MeasurementReport ::= SEQUENCE {
  -- Measurement IEs
  measurementIdentityNumber  MeasurementIdentityNumber,
  measuredResults            MeasuredResults          OPTIONAL,
  additionalMeasuredResults  MeasuredResultsList     OPTIONAL,
  eventResults              EventResults             OPTIONAL,
  -- Extension mechanism
  non-Release99-Information  SEQUENCE {}          OPTIONAL
}

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

PagingType1 ::= SEQUENCE {
  -- User equipment IEs
  pagingRecordList          PagingRecordList         OPTIONAL,
  -- Other IEs
  bcch-ModificationInfo    BCCH-ModificationInfo    OPTIONAL,
  -- Extension mechanism
  non-Release99-Information  SEQUENCE {}          OPTIONAL
}

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

PagingType2 ::= SEQUENCE {
  -- User equipment IEs
  pagingCause              PagingCause,
  -- Core network IEs
  cn-DomainIdentity        CN-DomainIdentity,
  pagingRecordTypeID       PagingRecordTypeID,
  -- Extension mechanism
  non-Release99-Information  SEQUENCE {}          OPTIONAL
}

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

PhysicalChannelReconfiguration ::= 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   DRX-CycleLengthCoefficient  OPTIONAL,
  re-EstablishmentTimer       Re-EstablishmentTimer     OPTIONAL,
  -- Core network IEs
  cn-InformationInfo          CN-InformationInfo          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 and PRACH info for RACH.
dl-CommonInformation          DL-CommonInformation          OPTIONAL,
dl-PDSCH-Information         DL-PDSCH-Information          OPTIONAL,
modeSpecificInfo             CHOICE {
    fdd                       SEQUENCE {
        cpch-SetInfo          CPCH-SetInfo          OPTIONAL
    },
    tdd                       NULL
},
dl-InformationPerRL-List     DL-InformationPerRL-List,
-- Extension mechanism
non-Release99-Information    SEQUENCE {}              OPTIONAL
}

```

```

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

```

```

PhysicalChannelReconfigurationComplete ::= SEQUENCE {
-- User equipment IEs
    ul-IntegProtActivationInfo IntegrityProtActivationInfo  OPTIONAL,
    modeSpecificInfo          CHOICE {
        fdd                   NULL,
        tdd                   SEQUENCE {
            ul-TimingAdvance  UL-TimingAdvance          OPTIONAL
        }
    },
-- Radio bearer IEs
    rb-UL-CiphActivationTimeInfo RB-ActivationTimeInfo      OPTIONAL,
    rb-WithPDCP-InfoList        RB-WithPDCP-InfoList       OPTIONAL,
-- Extension mechanism
    non-Release99-Information    SEQUENCE {}              OPTIONAL
}

```

```

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

```

```

PhysicalChannelReconfigurationFailure ::= SEQUENCE {
-- User equipment IEs
    failureCause                FailureCauseWithProtErr,
-- Extension mechanism
    non-Release99-Information    SEQUENCE {}              OPTIONAL
}

```

```

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

```

```

PhysicalSharedChannelAllocation ::= SEQUENCE {
-- User equipment IEs
    c-RNTI                      C-RNTI,
-- Physical channel IEs
    ul-TimingAdvance            UL-TimingAdvance          OPTIONAL,
    allocationPeriodInfo        AllocationPeriodInfo      OPTIONAL,
    pusch-Info                  PUSCH-Info                OPTIONAL,
    pdsch-Info                  PDSCH-Info                OPTIONAL,
    timeslotList                TimeslotList              OPTIONAL,
-- Extension mechanism
    non-Release99-Information    SEQUENCE {}              OPTIONAL
}

```

```

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

```

```

PUSCHCapacityRequest ::= SEQUENCE {
-- User equipment IEs
    c-RNTI                      C-RNTI,

```

```

-- Measurement IEs
  trafficVolumeMeasuredResultsList
    TrafficVolumeMeasuredResultsList,
    timeslotListWithISCP          TimeslotListWithISCP          OPTIONAL,
    primaryCCPCH-RSCP             PrimaryCCPCH-RSCP             OPTIONAL,
-- Extension mechanism
  non-Release99-Information       SEQUENCE {}                   OPTIONAL
}

```

```

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

```

```

RadioBearerReconfiguration ::= 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     DRX-CycleLengthCoefficient      OPTIONAL,
  re-EstablishmentTimer          Re-EstablishmentTimer           OPTIONAL,
  -- Core network IEs
  cn-InformationInfo              CN-InformationInfo              OPTIONAL,
  -- Radio bearer IEs
  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
  }
  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,
  dl-CommonInformation           DL-CommonInformation           OPTIONAL,
  dl-PDSCH-Information           DL-PDSCH-Information           OPTIONAL,
  modeSpecificPhysChInfo        CHOICE {
    fdd                            SEQUENCE {
      cpch-SetInfo                 CPCH-SetInfo                   OPTIONAL
    },
    tdd                            NULL
  },
  dl-InformationPerRL-List       DL-InformationPerRL-List,
  -- Extension mechanism
  non-Release99-Information       SEQUENCE {}                   OPTIONAL
}

```

```

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

```

```

RadioBearerReconfigurationComplete ::= SEQUENCE {
  -- User equipment IEs
  ul-IntegProtActivationInfo      IntegrityProtActivationInfo     OPTIONAL,
  modeSpecificInfo                CHOICE {
    fdd                            NULL,
    tdd                            SEQUENCE {
      ul-TimingAdvance            UL-TimingAdvance              OPTIONAL
    }
  },
  -- Radio bearer IEs
  rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo          OPTIONAL,

```

```

-- Extension mechanism
   non-Release99-Information      SEQUENCE {}                OPTIONAL
}

```

```

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

```

```

RadioBearerReconfigurationFailure ::= SEQUENCE {
  -- User equipment IES
  failureCause          FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information      SEQUENCE {}                OPTIONAL
}

```

```

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

```

```

RadioBearerRelease ::= 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        DRX-CycleLengthCoefficient        OPTIONAL,
  re-EstablishmentTimer             Re-EstablishmentTimer            OPTIONAL,
  -- Core network IES
  cn-InformationInfo                CN-InformationInfo                OPTIONAL,
  -- Radio bearer IES
  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
  }
  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,
  dl-CommonInformation               DL-CommonInformation              OPTIONAL,
  dl-PDSCH-Information               DL-PDSCH-Information              OPTIONAL,
  modeSpecificPhysChInfo             CHOICE {
    fdd                               SEQUENCE {
      cpch-SetInfo                    CPCH-SetInfo                    OPTIONAL
    },
    tdd                               NULL
  },
  dl-InformationPerRL-List           DL-InformationPerRL-List,
  -- Extension mechanism
  non-Release99-Information          SEQUENCE {}                OPTIONAL
}

```

```

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

```

```

RadioBearerReleaseComplete ::= SEQUENCE {
  -- User equipment IES
  ul-IntegProtActivationInfo         IntegrityProtActivationInfo         OPTIONAL,

```



```

        modeSpecificInfo          CHOICE {
            fdd                    NULL,
            tdd                    SEQUENCE {
                ul-TimingAdvance  UL-TimingAdvance          OPTIONAL
            }
        },
-- Radio bearer IEs
    rb-UL-CiphActivationTimeInfo  RB-ActivationTimeInfo          OPTIONAL,
    rb-WithPDCP-InfoList         RB-WithPDCP-InfoList          OPTIONAL,
-- Extension mechanism
    non-Release99-Information     SEQUENCE {}                  OPTIONAL
}

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

RadioBearerReleaseFailure ::= SEQUENCE {
-- User equipment IEs
    failureCause                  FailureCauseWithProtErr,
-- Extension mechanism
    non-Release99-Information     SEQUENCE {}                  OPTIONAL
}

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

RadioBearerSetup ::= 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   DRX-CycleLengthCoefficient   OPTIONAL,
    re-EstablishmentTimer        Re-EstablishmentTimer        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
    }
    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,
    dl-CommonInformation         DL-CommonInformation         OPTIONAL,
    dl-PDSCH-Information         DL-PDSCH-Information         OPTIONAL,
    modeSpecificPhysChInfo      CHOICE {
        fdd                      SEQUENCE {
            cpch-SetInfo         CPCH-SetInfo                 OPTIONAL
        },
        tdd                      NULL
    },
    dl-InformationPerRL-List     DL-InformationPerRL-List,
-- Extension mechanism
    non-Release99-Information     SEQUENCE {}                  OPTIONAL
}

```

```

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

RadioBearerSetupComplete ::= SEQUENCE {
  -- User equipment IEs
  ul-IntegProtActivationInfo      IntegrityProtActivationInfo      OPTIONAL,
  modeSpecificInfo                CHOICE {
    fdd                            NULL,
    tdd                            SEQUENCE {
      ul-TimingAdvance            UL-TimingAdvance            OPTIONAL
    }
  },
  hyperFrameNumber                HyperFrameNumber,
  -- Radio bearer IEs
  rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo            OPTIONAL,
  -- Extension mechanism
  non-Release99-Information        SEQUENCE {}                        OPTIONAL
}

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

RadioBearerSetupFailure ::= SEQUENCE {
  -- User equipment IEs
  failureCause                    FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information        SEQUENCE {}                        OPTIONAL
}

-- *****
--
-- RNTI REALLOCATION
--
-- *****

RNTIReallocation ::= 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     DRX-CycleLengthCoefficient     OPTIONAL,
  -- CN information elements
  cn-InformationInfo              CN-InformationInfo              OPTIONAL,
  -- Radio bearer IEs
  rb-WithPDCP-InfoList           RB-WithPDCP-InfoList           OPTIONAL,
  -- Extension mechanism
  non-Release99-Information        SEQUENCE {}                        OPTIONAL
}

-- *****
--
-- RNTI REALLOCATION COMPLETE
--
-- *****

RNTIReallocationComplete ::= 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
  non-Release99-Information        SEQUENCE {}                        OPTIONAL
}

-- *****
--
-- RNTI REALLOCATION FAILURE
--
--

```

```

-- *****
RNTIReallocationFailure ::= SEQUENCE {
  -- UE information elements
  failureCause          FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information SEQUENCE {} OPTIONAL
}

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

RRCConnectionReEstablishment ::= 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 DRX-CycleLengthCoefficient OPTIONAL,
  re-EstablishmentTimer      Re-EstablishmentTimer     OPTIONAL,
  cPRLC-ReconfsetIndicator   RLC-ReconfigurationsetIndicator,
  uPRLC-ReconfsetIndicator   RLC-ReconfigurationsetIndicator,
  -- 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,
  dl-CommonInformation        DL-CommonInformation        OPTIONAL,
  dl-PDSCH-Information        DL-PDSCH-Information        OPTIONAL,
  modeSpecificPhysChInfo     CHOICE {
    fdd SEQUENCE {
      cpch-SetInfo CPCH-SetInfo OPTIONAL
    },
    tdd NULL
  },
  dl-InformationPerRL-List    DL-InformationPerRL-List,
  -- Extension mechanism
  non-Release99-Information SEQUENCE {} OPTIONAL
}

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

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

```

```

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

RRCConnectionReEstablishmentComplete ::= SEQUENCE {
    -- User equipment IEs
    ul-IntegProtActivationInfo      IntegrityProtActivationInfo      OPTIONAL,
    modeSpecificInfo                CHOICE {
        fdd                          NULL,
        tdd                          SEQUENCE {
            ul-TimingAdvance          UL-TimingAdvance          OPTIONAL
        }
    },
    -- TABULAR: The choice above is optional in the tabular definitions,
    -- but this does not seem to make much sense. Either the choice should
    -- be optional and UL-TimingAdvance mandatory inside the TDD choice,
    -- but not both.
    -- Radio bearer IEs
    rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo            OPTIONAL,
    rb-WithPDCP-InfoList            RB-WithPDCP-InfoList            OPTIONAL,
    -- Extension mechanism
    non-Release99-Information        SEQUENCE {}                      OPTIONAL
}

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

RRCConnectionReEstablishmentRequest ::= SEQUENCE {
    -- User equipment IEs
    u-RNTI                            U-RNTI,
    acPAmRLCErrorIndication          BOOLEAN,
    uPAmRLCErrorIndication          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
    non-Release99-Information          SEQUENCE {}                      OPTIONAL
}

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

RRCConnectionReject ::= SEQUENCE {
    -- User equipment IEs
    initialUE-Identity                InitialUE-Identity,
    rejectionCause                    RejectionCause,
    waitTime                          WaitTime,
    redirectionInfo                   RedirectionInfo                  OPTIONAL,
    -- Extension mechanism
    non-Release99-Information          SEQUENCE {}                      OPTIONAL
}

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

RRCConnectionRelease ::= SEQUENCE {
    -- User equipment IEs
    rrc-MessageTX-Count               RRC-MessageTX-Count,
    -- The IE above is conditional on the UE state.
    releaseCause                      ReleaseCause,
    -- Extension mechanism
    non-Release99-Information          SEQUENCE {}                      OPTIONAL
}

```

```

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

RRCConnectionReleaseComplete ::= SEQUENCE {
    -- Extension mechanism
    non-Release99-Information    SEQUENCE {}                OPTIONAL
}

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

RRCConnectionRequest ::= SEQUENCE {
    -- User equipment IEs
    initialUE-Identity           InitialUE-Identity,
    initialUE-Capability         InitialUE-Capability,
    establishmentCause           EstablishmentCause,
    protocolErrorIndicator       ProtocolErrorIndicator,
    -- Measurement IEs
    measuredResultsOnRACH        MeasuredResultsOnRACH      OPTIONAL,
    -- Extension mechanism
    non-Release99-Information    SEQUENCE {}                OPTIONAL
}

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

RRCConnectionSetup ::= SEQUENCE {
    -- User equipment IEs
    initialUE-Identity           InitialUE-Identity,
    activationTime               ActivationTime              OPTIONAL,
    new-U-RNTI                   U-RNTI,
    new-c-RNTI                    C-RNTI                  OPTIONAL,
    utran-DRX-CycleLengthCoeff   DRX-CycleLengthCoefficient,
    re-EstablishmentTimer        Re-EstablishmentTimer    OPTIONAL,
    capabilityUpdateRequirement   CapabilityUpdateRequirement OPTIONAL,
    -- 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,
    -- Extension mechanism
    non-Release99-Information    SEQUENCE {}                OPTIONAL
}

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

RRCConnectionSetupComplete ::= SEQUENCE {
    -- User equipment IEs
    hyperFrameNumber            HyperFrameNumber,
    ue-RadioAccessCapability     UE-RadioAccessCapability,
    ue-SystemSpecificCapability  InterSystemMessage    OPTIONAL,
    -- Extension mechanism
    non-Release99-Information    SEQUENCE {}                OPTIONAL
}

-- *****

```

```

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

RRCStatus ::= SEQUENCE {
  -- Other IEs
  protocolErrorInformation      ProtocolErrorInformation,
  -- Extension mechanism
  non-Release99-Information     SEQUENCE {}                                OPTIONAL
}

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

SecurityModeCommand ::= SEQUENCE {
  -- User equipment IEs
  cipheringAlgorithm            CipheringAlgorithm,
  cipheringModeInfo             CipheringModeInfo                        OPTIONAL,
  integrityProtectionModeInfo   IntegrityProtectionModeInfo           OPTIONAL,
  -- Core network IEs
  cn-DomainIdentity             CN-DomainIdentity,
  -- Extension mechanism
  non-Release99-Information     SEQUENCE {}                                OPTIONAL
}

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

SecurityModeComplete ::= SEQUENCE {
  -- User equipment IEs
  hyperFrameNumber              HyperFrameNumber                        OPTIONAL,
  ul-IntegProtActivationInfo     IntegrityProtActivationInfo     OPTIONAL,
  -- Radio bearer IEs
  rb-UL-CiphActivationTimeInfo  RB-ActivationTimeInfoList      OPTIONAL,
  -- Extension mechanism
  non-Release99-Information     SEQUENCE {}                                OPTIONAL
}

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

SecurityModeFailure ::= SEQUENCE {
  -- User equipment IEs
  failureCause                   FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information     SEQUENCE {}                                OPTIONAL
}

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

SignallingConnectionRelease ::= SEQUENCE {
  -- Core network IEs
  signallingFlowInfoList         SignallingFlowInfoList,
  -- Extension mechanism
  non-Release99-Information     SEQUENCE {}                                OPTIONAL
}

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

SystemInformation-BCH ::= SEQUENCE {

```

```

-- Other information elements
modeSpecificInfo      CHOICE {
    fdd                SFN-Prime,
    tdd                NULL
},
payload               CHOICE {
    firstSegment       FirstSegment,
    subsequentSegment  SubsequentOrLastSegment,
    lastSegment        SubsequentOrLastSegment,
    lastAndComplete    SEQUENCE {
        completeSIB-List  CompleteSIB-List,
        lastSegment       SubsequentOrLastSegment
    },
    completeSIB-List   CompleteSIB-List,
    spare              NULL
}
}

```

```

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

```

```

SystemInformation-FACH ::= SEQUENCE {
-- Other information elements
    payload               CHOICE {
        firstSegment       FirstSegment,
        subsequentSegment  SubsequentOrLastSegment,
        lastSegment        SubsequentOrLastSegment,
        lastAndComplete    SEQUENCE {
            completeSIB-List  CompleteSIB-List,
            lastSegment       SubsequentOrLastSegment
        },
        completeSIB-List   CompleteSIB-List,
        spare              NULL
    }
}

```

```

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

```

```

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

```

```

-- *****
--
-- Subsequent or last segment
--
-- *****

```

```

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

```

```

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

```

```

CompleteSIB-List ::= SEQUENCE (SIZE(1..16)) OF
    CompleteSIB

```

```

CompleteSIB ::= SEQUENCE {
-- Other information elements
    sib-Type            SIB-Type,
    sib-Content          SIB-Content
}

```

```

}

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

SystemInformationChangeIndication ::= SEQUENCE {
    -- Other IES
    bcch-ModificationInfo          BCCH-ModificationInfo,
    -- Extension mechanism
    non-Release99-Information      SEQUENCE {}           OPTIONAL
}

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

TransportChannelReconfiguration ::= 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      DRX-CycleLengthCoefficient    OPTIONAL,
    re-EstablishmentTimer           Re-EstablishmentTimer        OPTIONAL,
    -- Core network IES
    cn-InformationInfo              CN-InformationInfo           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,
    dl-CommonInformation             DL-CommonInformation         OPTIONAL,
    dl-PDSCH-Information             DL-PDSCH-Information         OPTIONAL,
    modeSpecificPhysChInfo          CHOICE {
        fdd                          SEQUENCE {
            cpch-SetInfo              CPCH-SetInfo              OPTIONAL
        },
        tdd                          NULL
    },
    dl-InformationPerRL-List        DL-InformationPerRL-List     OPTIONAL,
    -- Extension mechanism
    non-Release99-Information        SEQUENCE {}                 OPTIONAL
}

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

TransportChannelReconfigurationComplete ::= SEQUENCE {
    -- User equipment IES
    ul-IntegProtActivationInfo      IntegrityProtActivationInfo    OPTIONAL,
    modeSpecificInfo                CHOICE {
        fdd                          NULL,
        tdd                          SEQUENCE {
            ul-TimingAdvance          UL-TimingAdvance            OPTIONAL
        }
    }
}

```



```

    },
    -- Radio bearer IEs
    rb-UL-CiphActivationTimeInfo      RB-ActivationTimeInfo      OPTIONAL,
    rb-WithPDCP-InfoList              RB-WithPDCP-InfoList    OPTIONAL,
    -- Extension mechanism
    non-Release99-Information          SEQUENCE {}              OPTIONAL
}

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

TransportChannelReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
    failureCause                      FailureCauseWithProtErr,
    -- Extension mechanism
    non-Release99-Information          SEQUENCE {}              OPTIONAL
}

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

TransportFormatCombinationControl ::= SEQUENCE {
    channelRequirement                 CHOICE {
        dpch-TFCS-InUplink             TFC-Subset,
        tfc-ControlDuration             TFC-ControlDuration
    },
    -- Extension mechanism
    non-Release99-Information          SEQUENCE {}              OPTIONAL
}

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

TransportFormatCombinationControlFailure ::= SEQUENCE {
    -- User equipment IEs
    failureCause                      FailureCauseWithProtErr,
    -- Extension mechanism
    non-Release99-Information          SEQUENCE {}              OPTIONAL
}

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

UECapabilityEnquiry ::= SEQUENCE {
    -- User equipment IEs
    capabilityUpdateRequirement        CapabilityUpdateRequirement,
    -- Extension mechanism
    non-Release99-Information          SEQUENCE {}              OPTIONAL
}

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

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
    ue-RadioAccessCapability           UE-RadioAccessCapability  OPTIONAL,
    -- Other IEs
    ue-SystemSpecificCapability        InterSystemMessage       OPTIONAL,
    -- Extension mechanism
    non-Release99-Information          SEQUENCE {}              OPTIONAL
}

-- *****

```

```

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

UECapabilityInformationConfirm ::= SEQUENCE {
    -- Extension mechanism
    non-Release99-Information      SEQUENCE {}                OPTIONAL
}

-- *****

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

UplinkDirectTransfer ::= SEQUENCE {
    -- Core network IEs
    flowIdentifier                FlowIdentifier,
    nas-Message                   NAS-Message,
    -- Measurement IEs
    measuredResultsOnRACH        MeasuredResultsOnRACH        OPTIONAL,
    -- Extension mechanism
    non-Release99-Information     SEQUENCE {}                OPTIONAL
}

-- *****

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

UplinkPhysicalChannelControl ::= SEQUENCE {
    -- Physical channel IEs
    ccTrCH-PowerControlInfo      CCTrCH-PowerControlInfo      OPTIONAL,
    timingAdvance                UL-TimingAdvance            OPTIONAL,
    individualTS-InterferenceList IndividualTS-InterferenceList  OPTIONAL,
    rach-ConstantValue           ConstantValue                OPTIONAL,
    dpch-ConstantValue           ConstantValue                OPTIONAL,
    usch-ConstantValue           ConstantValue                OPTIONAL,
    -- Extension mechanism
    non-Release99-Information     SEQUENCE {}                OPTIONAL
}

-- *****

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

URAUUpdate ::= SEQUENCE {
    -- User equipment IEs
    u-RNTI                       U-RNTI,
    ura-UpdateCause              URA-UpdateCause,
    protocolErrorIndicator       ProtocolErrorIndicatorWithInfo,
    -- Extension mechanism
    non-Release99-Information     SEQUENCE {}                OPTIONAL
}

-- *****

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

URAUUpdateConfirm ::= 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   DRX-CycleLengthCoefficient,
    -- 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
        non-Release99-Information      SEQUENCE {}                  OPTIONAL
}

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

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

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
FROM PhysicalChannel-IEs

```

```

    InterSystemInfo
FROM Measurement-IEs

```

```

    ProtocolErrorInformation
FROM Other-IEs

```

```

    maxAlgoTypeCount,
    maxDRAC-Classes,
    maxFrequencyBandsCount,
    maxNoSystemCapability,
    maxRAT-Count,
    pageCount
FROM Constant-definitions;

```

```

ActivationTime ::= INTEGER (0..255)

```

```

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,
        spare1, spare2, spare3 }

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

CipheringAlgorithm ::=
    ENUMERATED {
        standardUEA1,
        spare1, spare2, spare3, spare4,
        spare5, spare6, spare7, spare8,
        spare9, spare10, spare11, spare12,
        spare13, spare14, spare15 }

CipheringModeCommand ::=
    CHOICE {
        startRestart
        stopCiphering
    }

CipheringModeInfo ::=
    SEQUENCE {
        cipheringModeCommand          CipheringModeCommand,
        -- TABULAR: The ciphering algorithm is included in
        -- the CipheringModeCommand.
        activationTimeForDPCH          ActivationTime          OPTIONAL,
        rb-DL-CiphActivationTimeInfo   RB-ActivationTimeInfoList OPTIONAL
    }

CN-PagedUE-Identity ::=
    CHOICE {
        imsi-GSM-MAP
        tmsi-GSM-MAP
        p-TMSI-GSM-MAP
        imsi-DS-41
        tmsi-DS-41
        spare
    }

CompressedModeMeasCapability ::=
    SEQUENCE {
        fdd-Measurements
        tdd-Measurements
        gsm-Measurements
        multiCarrierMeasurements
    }

ConformanceTestCompliance ::=
    ENUMERATED {
        r99,
        spare1, spare2, spare3, spare4,
        spare5, spare6, spare7 }

CPCH-Parameters ::=
    SEQUENCE {
        initialPriorityDelayList
        backoffControlParams
    }

DL-PhysChCapabilityFDD ::=
    SEQUENCE {
        maxSimultaneousCCTrCH-Count
        maxNoDPCH-PDSCH-Codes
        maxNoPhysChBitsReceived
        supportForSF-512
        supportOfPDSCH
        simultaneousSCCPCH-DPCH-Reception
    }

DL-PhysChCapabilityTDD ::=
    SEQUENCE {
        maxSimultaneousCCTrCH-Count
        maxTS-PerFrame
        maxPhysChPerFrame
        minimumSF
        supportOfPDSCH
    }

DL-TransChCapability ::=
    SEQUENCE {
        maxNoBitsReceived
        maxConvCodeBitsReceived
        turboDecodingSupport
    }

```

```

    maxSimultaneousTransChs           MaxSimultaneousTransChsDL,
    maxReceivedTransportBlocks        MaxTransportBlocksDL,
    maxNumberOfTFC-InTFCs            MaxNumberOfTFC-InTFCs-DL,
    maxNumberOfTF                    MaxNumberOfTF
}

DRAC-SysInfo ::=
    transmissionProbability
    maximumBitRate
}

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

DRX-CycleLengthCoefficient ::=
    INTEGER (2..12)

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

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

EstablishmentCause ::=
    ENUMERATED {
        originatingSpeechCall,
        originatingCS-DataCall,
        originatingPS-DataCall,
        terminatingSpeechCall,
        terminatingCS-DataCall,
        terminatingPS-DataCall,
        emergencyCall,
        interSystemCellReselection,
        locationUpdate,
        imsi-Detach,
        sms,
        callRe-establishment,
        unspecified,
        spare1, spare2, spare3 }

FailureCauseWithProtErr ::=
    CHOICE {
        configurationUnacceptable      NULL,
        physicalChannelFailure         NULL,
        incompatibleSimultaneousReconfiguration
                                        NULL,
        protocolError                 ProtocolErrorInformation,
        spare                          NULL
    }

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

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

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 (8)) OF
        NS-IP

InitialUE-Capability ::=
    SEQUENCE {
        maximumAM-EntityNumber
    }

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,
    spare                       NULL
}

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

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

IntegrityProtectionAlgorithm ::= ENUMERATED {
    standardUIA1,
    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
    },
    spare                        NULL
}

IntegrityProtectionModeInfo ::= SEQUENCE {
    integrityProtectionModeCommand IntegrityProtectionModeCommand,
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialisation 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
}

MaximumAM-EntityNumber ::=     ENUMERATED {
    am-2to3,
    am-4to8,
    am-16to32,
    spare1 }

MaximumAM-EntityNumberRLC-Cap ::= ENUMERATED {
    am2, am3, am4, am8, am16, am32,
    spare1, spare2 }

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

MaxNoDPDCH-BitsTransmitted ::= ENUMERATED {
    b150, b300, b600, b1200, b2400,
    b4800, b9600, b19200, b28800, b38400,
    b48000, b57600,
    spare1, spare2, spare3, spare4 }

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

MaxNoPhysChBitsReceived ::=    ENUMERATED {
    b300, b600, b1200, b2400, b4800,
    b9600, b19200, b28800, b38400,
    b48000, b57600, b67200,

```

```

        spare1, spare2, spare3, spare4 }

MaxNoSCCPCH-RL ::=
    ENUMERATED {
        r11, 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
MaxPhysChPerFrame ::=
    INTEGER (1..224)

MaxPhysChPerTimeslot ::=
    ENUMERATED {
        ts1, ts2 }

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 ::=
    ENUMERATED {
        gsm, multicarrier,
        spare1, spare2 }

MultiRAT-CapabilityList ::=
    SEQUENCE (SIZE (1..maxRAT-Count)) OF
        MultiRAT-Capability

```

```

N-300 ::= INTEGER (1..8)
N-302 ::= INTEGER (1..8)
N-303 ::= INTEGER (1..8)
N-304 ::= INTEGER (1..8)
N-310 ::= INTEGER (1..8)
N-312 ::= ENUMERATED {
    s1, s50, s100, s200, s400,
    s600, s800, s1000 }
N-313 ::= ENUMERATED {
    s1, s50, s100, s200, s400,
    s600, s800, s1000 }
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
    rai
}
PagingCause ::= ENUMERATED {
    terminatingSpeechCall,
    terminatingCS-DataCall,
    terminatingPS-DataCall,
    sms,
    unspecified,
    spare1, spare2, spare3 }
PagingRecord ::= CHOICE {
    cn-Page
        SEQUENCE {
            pagingCause,
            cn-DomainIdentity,
            cn-pagedUE-Identity
        },
    utran-Page
        SEQUENCE {
            u-RNTI
        }
}
PagingRecordList ::= SEQUENCE (SIZE (1..pageCount)) OF
    PagingRecord
PDCP-Capability ::= SEQUENCE {
    losslessSRNS-RelocationSupport
    supportedHC-AlgoTypeList
}
PhysicalChannelCapability ::= SEQUENCE {
    modeSpecificInfo
        CHOICE {
            fdd
                SEQUENCE {
                    downlinkPhysChCapability
                    DL-PhysChCapabilityFDD,

```



```

        uplinkPhysChCapability          UL-PhysChCapabilityFDD
    },
    tdd
        downlinkPhysChCapability        DL-PhysChCapabilityTDD,
        uplinkPhysChCapability          UL-PhysChCapabilityTDD
    }
}

ProtocolErrorCause ::=
    ENUMERATED {
        transferSyntaxError,
        messageTypeNonexistent,
        messageNotCompatibleWithReceiverState,
        ie-ValueNotComprehended,
        messageExtensionNotComprehended,
        spare1, spare2, spare3 }

ProtocolErrorIndicator ::=
    ENUMERATED {
        noError, errorOccurred }

ProtocolErrorIndicatorWithInfo ::= CHOICE {
    noError          NULL,
    errorOccurred    ProtocolErrorInformation
}

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

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

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

RedirectionInfo ::=
    CHOICE {
        frequencyInfo,
        interSystemInfo,
        spare
    }

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

ReleaseCause ::=
    ENUMERATED {
        normalEvent,
        unspecified,
        pre-emptiveRelease,
        congestion,
        re-establishmentReject,
        spare1, spare2, spare3 }

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

RFC2507 ::=
    SEQUENCE {
        maximumMaxHeader          INTEGER (60..65535)          DEFAULT 65535,
        maximumTCP-Space          INTEGER (3..255)          DEFAULT 255,
        maximumNonTCP-Space       INTEGER (3..65535)        DEFAULT 65535
    }

RLC-Capability ::=
    SEQUENCE {
        totalRLC-AM-BufferSize    TotalRLC-AM-BufferSize,

```

```

    maximumAM-EntityNumber                MaximumAM-EntityNumberRLC-Cap
}
| RLC-ReconfigurationIndicator RLC-ResetIndicator ::= BOOLEAN
RRC-MessageSequenceNumberList ::= SEQUENCE (SIZE (2..3)) OF
    RRC-MessageSequenceNumber
RRC-MessageSequenceNumber ::= INTEGER (0..15)
RRC-MessageTX-Count ::= INTEGER (1..8)
S-RNTI ::= BIT STRING (SIZE (20))
S-RNTI-2 ::= INTEGER (0..1023)
SecurityCapability ::= SEQUENCE {
    cipheringAlgorithm          CipheringAlgorithm,
    integrityProtectionAlgorithm IntegrityProtectionAlgorithm
}
SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported                NULL,
    supported                    MaxNoSCCPCH-RL
}
SRNC-Identity ::= BIT STRING (SIZE (12))
SupportedHC-AlgoType ::= CHOICE {
    rfc2507                      RFC2507,
    spare                          NULL
}
SupportedHC-AlgoTypeList ::= SEQUENCE (SIZE (1..maxAlgoTypeCount)) OF
    SupportedHC-AlgoType
SystemSpecificCapUpdateReq ::= ENUMERATED {
    gsm, spare1, spare2, spare3,
    spare4, spare5, spare6, spare7,
    spare8, spare9, spare10, spare11,
    spare12, spare13, spare14, spare15 }
SystemSpecificCapUpdateReqList ::= SEQUENCE (SIZE (1..maxNoSystemCapability)) OF
    SystemSpecificCapUpdateReq
T-300 ::= INTEGER (1..8)
T-301 ::= INTEGER (1..8)
T-302 ::= INTEGER (1..8)
T-303 ::= INTEGER (1..8)
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, s10, s20, s30, s60,
        s180, s600, s1200, s1800 }

T-315 ::=
    ENUMERATED {
        s0, s50, s100, s200, s400,
        s600, s800, s1000 }

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

TMSI-and-LAI-GSM-MAP ::=
    tmsi
    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 ::=
    dl-TransChCapability
    ul-TransChCapability
    }

TurboSupport ::=
    notSupported
    supported
    }

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

U-RNTI ::=
    srnc-Identity
    s-RNTI
    }

U-RNTI-Short ::=
    srnc-Identity
    s-RNTI-2
    }

UE-ConnTimersAndConstants ::=
    t-301
    t-302
    n-302
    t-303
    n-303
    t-304
    n-304
    t-305
    t-306
    t-307
    t-308
    t-309
    t-310
    n-310
    t-311
    t-312
    n-312
    t-313
    T-301,
    T-302,
    N-302,
    T-303,
    N-303,
    T-304,
    N-304,
    T-305,
    T-306,
    T-307,
    T-308,
    T-309,
    T-310,
    N-310,
    T-311,
    T-312,
    N-312,
    T-313,

```

```

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

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-CapabilityList OPTIONAL,
    multiModeCapability      MultiModeCapability
}

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

UE-RadioAccessCapability ::= SEQUENCE {
    conformanceTestCompliance ConformanceTestCompliance,
    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,
    maxSimultaneousTransChsUL    MaxSimultaneousTransChsUL,
    maxTransportBlocksUL         MaxTransportBlocksUL,
    maxNumberOfTFC-InTFCS-UL     MaxNumberOfTFC-InTFCS-UL,
    maxNumberOfTF                MaxNumberOfTF
}

URA-UpdateCause ::= ENUMERATED {
    changeOfURA,
    periodicURAUpdate,
    re-enteredServiceArea,
    spare1, spare2, spare3,
    spare4, spare5
}

WaitTime ::= INTEGER (0..15)

END

```

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 296r3		Current Version: 3.2.0	
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team	
For submission to: TSG-RAN #8	for approval <input checked="" type="checkbox"/>	strategic <input type="checkbox"/>	(for SMG use only)
list expected approval meeting # here ↑	for information <input type="checkbox"/>	non-strategic <input type="checkbox"/>	

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 UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 22nd May, 2000

Subject: RLC Info

Work item:

Category:	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input checked="" type="checkbox"/> D Editorial modification <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
------------------	--	-----------------	--

(only one category Shall be marked With an X)

Reason for change:

- "Need" column of "Transmission RLC discard" is changed to MP, since this IE indicates which SDU discard mode should be used, as well as its parameters.
- "Need" column of "Polling info" and "DL RLC status info" is changed to MP, since trigger for polling and STATUS report must be notified to UE.
- "In sequence delivery" IE is removed from UM and TM, since PDU is delivered in sequence in UM and TM anyway.
- Value ranges are modified, to avoid collision with the changes proposed in R2-001152.
- "MaxDAT" is added to "No discard" of SDU discard mode, since the maximum number of retransmission before reset procedure must be known.

Clauses affected: 10.3.4.18, 10.3.4.20

Other specs Affected:	Other 3G core specifications <input type="checkbox"/> → List of CRs: <input type="text"/> Other GSM core specifications <input type="checkbox"/> → List of CRs: <input type="text"/> MS test specifications <input type="checkbox"/> → List of CRs: <input type="text"/> BSS test specifications <input type="checkbox"/> → List of CRs: <input type="text"/> O&M specifications <input type="checkbox"/> → List of CRs: <input type="text"/>
------------------------------	---

Other comments:



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

10.3.4.18 RLC info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Uplink RLC mode</i>	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used. One spare value needed, criticality: reject.
>AM RLC				
>>Transmission RLC discard	OPMP		Transmission RLC discard 10.3.4.20	
>>Transmission window size	MP		Integer(1,8,16,32,128,256,512,768,1024,1536,2048,2047,2560,3072,3584,4096,4095)	Maximum number of RLC PUs sent without getting them acknowledged. This parameter is needed if acknowledged mode is used. One spare value needed, criticality: reject
>>Timer_RST	MP		EnumeratedInteger(50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 700, 800, 900, 1000)	It is used to detect the loss of RESET ACK PDU. 16 spare values needed, criticality: reject
>>Max_RST	MP		EnumeratedInteger(1, 4, 6, 8, 12, 16, 24, 32)	The maximum number of retransmission of RESET PDU. 8 spare values needed, criticality: reject
>> Polling info	OPMP		Polling info 10.3.4.4	
>UM RLC				
>> Transmission RLC discard	OP		Transmission RLC discard 10.3.4.20	
>TM RLC				(no specific data)
CHOICE <i>Downlink RLC mode</i>	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used. One spare value needed, criticality: reject.
>AM RLC				
>>In-sequence delivery	MP		Boolean	TRUE indicates that RLC shall preserve the order of higher layer PDUs when these are delivered.
>>Receiving window size	MP		Integer(1,8,16,32,128,256,512,768,1024,1536,2048,2047,2560,3072,3584,4096,4095)	Maximum number of RLC PUs allowed to be received. This parameter is needed if acknowledged mode is used. At least one spare value with criticality reject needed
>>Downlink RLC status Info	OPMP		Downlink RLC status info 10.3.4.1	
>UM RLC				(No data)
>>In-sequence delivery	MP		Boolean	TRUE indicates that RLC shall preserve the order of higher layer PDUs when these are delivered.
>TM RLC				(No data)
>>In-sequence delivery	MP		Boolean	TRUE indicates that RLC shall

				preserve the order of higher layer PDUs when these are delivered.
--	--	--	--	---

10.3.4.20 Transmission RLC Discard

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE SDU Discard Mode	MP			Different modes for discharge the RLC buffer on the transmitter side; "Timer based with explicit signalling", "Timer based without explicit signalling", "Discard after Max_DAT retransmissions", or "No Discard". For unacknowledged mode only "Timer based without explicit signalling" is applicable. If "No_discard" is used, reset procedure shall be done after Max_DAT retransmissions.
>Timer based explicit				
>>Timer_MRW	MP		Enumerated integer(50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 300, 400, 500, 700, 900, 1000, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 700, 800, 900, 1000)	It is used to trigger the retransmission of a STATUS PDU containing an MRW SUFI field. 16 spare values needed, criticality: reject
>>Timer_discard	MP		Real(0.1, 0.25, 0.5, 0.75, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 7.5)	Elapsed time in seconds before a SDU is discarded.
>>MaxMRW	MP		Enumerated integer(1, 4, 6, 8, 12, 16, 24, 32)	It is the maximum value for the number of retransmissions of a MRW command 8 spare values needed, criticality: ffs
>Timer based no explicit				
>>Timer_discard	MP		Real(0.1, 0.25, 0.5, 0.75, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 7.5)	Elapsed time in seconds before a SDU is discarded.
>Max DAT retransmissions				
>> Max_DAT	MP		Integer(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40)	Number of retransmissions of a PU before a SDU is discarded.
>>Timer_MRW	MP		Integer(50, 60, 70, 80, 90, 100, 120)	It is used to trigger the retransmission of a STATUS PDU containing an MRW SUFI

			140, 160, 180, 200, 300, 400, 500, 700, 900)	field. 16 spare values needed, criticality: reject
>>MaxMRW	MP		Integer(1, 4, 6, 8, 12, 16, 24, 32)	It is the maximum value for the number of retransmissions of a MRW command 8 spare values needed, criticality: ffs
>No discard				(no data)
>> Max_DAT	MP		Integer(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40)	Number of retransmissions of a PU before a SDU is discarded.

CHOICE SDU Discard Mode	Condition under which the given SDU Discard Mode is chosen
Timer based explicit	If the modes for discharge of the RLC buffer on the transmitter side is "Timer based with explicit signalling"
Timer based no explicit	If the modes for discharge of the RLC buffer on the transmitter side is "Timer based without explicit signalling" For unacknowledged mode, only Timer based without explicit signalling is applicable.
Max DAT retransmissions	If the modes for discharge of the RLC buffer on the transmitter side is "Discard after Max_DAT retransmissions"
No discard	If the modes for discharge the of RLC buffer on the transmitter side is "Reset procedure shall be done after Max_DAT retransmissions"

11.3.4 Radio bearer information elements

RadioBearer-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

CN-DomainIdentity,
RAB-Identity
FROM CoreNetwork-IEs

TransportChannelIdentity
FROM TransportChannel-IEs

algorithmCount,
maxMuxOptionsCount,
maxOtherRBcount,
maxPredefConfigCount,
maxRABcount,
maxRB-WithPDCPcount,
maxRBcount,
maxReconRBcount,
maxReconRBs,
maxRelRBcount,
maxSetupRBcount,
maxSRBcount

FROM Constant-definitions;

AlgorithmSpecificInfo ::= CHOICE {
 rfc2507-Info RFC2507-Info,
 spare NULL
}

DL-AM-RLC-Mode ::= SEQUENCE {
 inSequenceDelivery BOOLEAN,
 receptionRLC-DiscardTimer ReceptionRLC-DiscardTimer OPTIONAL,


```

-- TABULAR: The CV in the specification is unclear - which IE does
-- it refer to?
dl-RLC-StatusInfo          DL-RLC-StatusInfo
}

DL-LogicalChannelMapping ::= SEQUENCE {
    dl-TransportChannelType    DL-TransportChannelType,
    transportChannelIdentity    TransportChannelIdentity    OPTIONAL,
    logicalChannelIdentity     LogicalChannelIdentity    OPTIONAL
}

DL-LogicalChannelMappingList ::= SEQUENCE (SIZE (1..2)) OF
    DL-LogicalChannelMapping

DL-RLC-Mode ::= CHOICE {
    dl-AM-RLC-Mode            DL-AM-RLC-Mode,
    dl-UM-RLC-Mode            DL-UM-RLC-ModeNULL,
    dl-TM-RLC-Mode            DL-TM-RLC-ModeNULL
}

DL-RLC-StatusInfo ::= SEQUENCE {
    timerStatusProhibit      TimerStatusProhibit    OPTIONAL,
    timerEPC                  TimerEPC    OPTIONAL,
    missingPU-Indicator       BOOLEAN,
    timerStatusPeriodic      TimerStatusPeriodic    OPTIONAL
}

DL-TM-RLC-Mode ::= SEQUENCE {
    inSequenceDelivery        BOOLEAN
}

DL-TransportChannelType ::= ENUMERATED {
    dch, fach, dsch }

DL-UM-RLC-Mode ::= SEQUENCE {
    inSequenceDelivery        BOOLEAN
}

ExplicitDiscard ::= SEQUENCE {
    timerMRW                  TimerMRW,
    timerDiscard              TimerDiscard,
    maxMRW                    MaxMRW
}

ExpectReordering ::= ENUMERATED {
    reorderingNotExpected,
    reorderingExpected }

HeaderCompressionInfo ::= SEQUENCE {
    reconfigurationReset      BOOLEAN,
    -- TABULAR: Optional boolean values are not very efficient...
    algorithmSpecificInfo     AlgorithmSpecificInfo
}

HeaderCompressionInfoList ::= SEQUENCE (SIZE (1..algorithmCount)) OF
    HeaderCompressionInfo

LogicalChannelIdentity ::= INTEGER (1..16)

MAC-LogicalChannelPriority ::= INTEGER (1..8)

MaxDAT ::= ENUMERATED {
    dat1, dat2, dat3, dat4, dat5, dat6,
    dat7, dat8, dat9, dat10, dat15, dat20,
    dat25, dat30, dat35, dat40 }

MaxMRW ::= ENUMERATED {
    mm1, mm4, mm6, mm8, mm12, mm16,
    mm24, mm32, spare1, spare2, spare3,
    spare4, spare5, spare6, spare7, spare8 }

MaxRST ::= ENUMERATED {
    rst1, rst4, rst6, rst8, rst12,
    rst16, rst24, rst32,
    spare1, spare2, spare3, spare4,
    spare5, spare6, spare7, spare8 }

NoExplicitDiscard ::= ENUMERATED {

```

```

dt0-1, dt0-25, dt0-5, dt0-75, dt1,
dt1-25, dt1-5, dt1-75, dt2, dt2-5,
dt3, dt3-5, dt4, dt4-5, dt5, dt7-5 }

PDCP-Info ::=
    losslessSRNS-RelocSupport
    pdcp-PDU-Header
    headerCompressionInfoList
}

SEQUENCE {
    BOOLEAN,
    PDCP-PDU-Header
    HeaderCompressionInfoList
OPTIONAL,
OPTIONAL
}

PDCP-InfoReconfig ::=
    pdcp-Info
    pdcp-SN-Info
}

SEQUENCE {
    PDCP-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 ::=
    timerPollProhibit
    timerPoll
    poll-PU
    poll-SDU
    lastTransmissionPU-Poll
    lastRetransmissionPU-Poll
    pollWindow
    timerPollPeriodic
}

SEQUENCE {
    TimerPollProhibit
    TimerPoll
    Poll-PU
    Poll-SDU
    BOOLEAN,
    BOOLEAN,
    PollWindow
    TimerPollPeriodic
OPTIONAL,
OPTIONAL,
OPTIONAL,
OPTIONAL,
OPTIONAL,
OPTIONAL
}

PollWindow ::=
ENUMERATED {
    pw50, pw60, pw70, pw80, pw85,
    pw90, pw95, pw100,
    spare1, spare2, spare3, spare4,
    spare5, spare6, spare7, spare8 }

PredefinedConfigIdentity ::=
INTEGER (0..15)

PredefinedConfigValueTag ::=
INTEGER (0..15)

PreDefRadioConfiguration ::=
    predefinedConfigIdentity
    predefinedConfigValueTag
    predefinedRB-Configuration
}

SEQUENCE {
    PredefinedConfigIdentity,
    PredefinedConfigValueTag,
    PredefinedRB-Configuration
}

PreDefRadioConfigurationList ::=
SEQUENCE (SIZE (1..maxPredefConfigCount)) OF
    PreDefRadioConfiguration

PredefinedRB-Configuration ::=
    srb-InformationList
    rb-InformationList
}

SEQUENCE {
    SRB-InformationList,
    RB-InformationList
OPTIONAL
}

RAB-Info ::=
    rab-Identity
    cn-DomainIdentity
}

SEQUENCE {
    RAB-Identity,
    CN-DomainIdentity
}

RAB-InformationSetup ::=
    rab-Info
    rb-InformationSetupList
}

SEQUENCE {
    RAB-Info,
    RB-InformationSetupList
}

RAB-InformationSetupList ::=
SEQUENCE (SIZE (1..maxRABcount)) OF
    RAB-InformationSetup

```

```

RB-ActivationTimeInfo ::=          SEQUENCE {
    rb-Identity                    RB-Identity,
    rlc-SequenceNumber             RLC-SequenceNumber
}

RB-ActivationTimeInfoList ::=      SEQUENCE (SIZE (1..maxReconRBs)) OF
    RB-ActivationTimeInfo

RB-Identity ::=                   INTEGER (0..31)

RB-InformationAffected ::=         SEQUENCE {
    rb-Identity                    RB-Identity,
    rb-MappingInfo                 RB-MappingInfo
}

RB-InformationAffectedList ::=     SEQUENCE (SIZE (1..maxOtherRBcount)) OF
    RB-InformationAffected

RB-InformationList ::=            SEQUENCE (SIZE (1..maxRBcount)) OF
    RB-InformationSetup

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..maxReconRBcount)) OF
    RB-InformationReconfig

RB-InformationRelease ::=          SEQUENCE {
    rb-Identity                    RB-Identity
}

RB-InformationReleaseList ::=      SEQUENCE (SIZE (1..maxRelRBcount)) OF
    RB-InformationRelease

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..maxSetupRBcount)) OF
    RB-InformationSetup

RB-MappingInfo ::=               SEQUENCE (SIZE (1..maxMuxOptionsCount)) OF
    RB-MappingOption

RB-MappingOption ::=             SEQUENCE {
    ul-LogicalChannelMappingList   UL-LogicalChannelMappingList    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..maxRB-WithPDCPcount)) OF
    RB-WithPDCP-Info

ReceivingWindowSize ::=          ENUMERATED {
    rw1, rw8, rw16, rw32, rw128, rw256,
    rw512, rw768, rw1024, rw1536, rw2048rw2047,
    rw2560, rw3072, rw3584, rw4096rw4095 }

ReceptionRLC-DiscardTimer ::=    ENUMERATED {
    dt100, dt250, dt500, dt750, dt1000,
    dt1250, dt1500, dt1750, dt2000, dt2500,
    dt3000, dt3500, dt4000, dt4500,

```

dt5000, dt7500 }

```
Retransmission ::= SEQUENCE {
    maxDAT MaxDAT,
    timerMRW TimerMRW,
    maxMRW MaxMRW
}

RFC2507-Info ::= SEQUENCE {
    f-MAX-PERIOD INTEGER (1..65535) OPTIONAL,
    f-MAX-TIME INTEGER (1..255) OPTIONAL,
    max-HEADER INTEGER (60..65535) OPTIONAL,
    tcp-SPACE INTEGER (3..255) OPTIONAL,
    non-TCP-SPACE INTEGER (3..65535) OPTIONAL,
    expectReordering ExpectReordering
    -- TABULAR: The IE above has only two possible values, so using Optional
    -- 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-InformationList ::= SEQUENCE (SIZE (1..maxSRBcount)) OF
    SRB-InformationSetup

SRB-InformationSetup ::= SEQUENCE {
    rb-Identity RB-Identity,
    rlc-InfoChoice RLC-InfoChoice,
    rb-MappingInfo RB-MappingInfo
}

SRB-InformationSetupList2 ::= SEQUENCE (SIZE (3..4)) OF
    SRB-InformationSetup

SRB-InformationSetupList ::= SEQUENCE (SIZE (1..maxSRBcount)) OF
    SRB-InformationSetup

TimerEPC ::= ENUMERATED {
    te50, te100, te150, te200, te250,
    te300, te350, te400, te450, te500,
    te550, te600, te700, te800,
    te900, te1000 }

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 }

TimerMRW ::= ENUMERATED {
    tm50, tm60, tm70, tm80, tm90, tm100, tm150, tm120,
    tm140, tm160, tm180, tm200, tm250,
    tm300, tm350, tm400, tm450, tm500,
    tm550, tm600, tm700, tm800, tm900, tm1000,
    spare1, spare2, spare3, spare4, spare5,
    spare6, spare7, spare8, spare9, spare10,
    spare11, spare12, spare13, spare14,
    spare15, spare16 }

TimerPoll ::= ENUMERATED {
    tp50, tp100, tp150, tp200, tp250,
    tp300, tp350, tp400, tp450, tp500,
    tp550, tp600, tp700, tp800,
    tp900, 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 {
        tpp50, tpp100, tpp150, tpp200, tpp250,
        tpp300, tpp350, tpp400, tpp450, tpp500,
        tpp550, tpp600, tpp700, tpp800,
        tpp900, 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 {
        tsp50, tsp100, tsp150, tsp200, tsp250,
        tsp300, tsp350, tsp400, tsp450, tsp500,
        tsp550, tsp600, tsp700, tsp800,
        tsp900, tsp1000,
        spare1, spare2, spare3, spare4, spare5,
        spare6, spare7, spare8, spare9, spare10,
        spare11, spare12, spare13, spare14,
        spare15, spare16 }

TimerStatusProhibit ::=
    ENUMERATED {
        tsp160, tsp320, tsp640, tsp1280 }

TransmissionRLC-Discard ::=
    CHOICE {
        timerBasedExplicit
        timerBasedNoExplicit
        maxDAT-Retransmission
        noDiscard
    }

TransmissionWindowSize ::=
    ENUMERATED {
        tw1, tw8, tw16, tw32, tw128, tw256,
        tw512, tw768, tw1024, tw1536, tw2048tw2047,
        tw2560, tw3072, tw3584, tw4096tw4095 }

UL-AM-RLC-Mode ::=
    SEQUENCE {
        transmissionRLC-Discard
        transmissionWindowSize
        timerRST
        max-RST
        pollingInfo
    }

UL-LogicalChannelMapping ::=
    SEQUENCE {
        ul-TransportChannelType
        transportChannelIdentity
        logicalChannelIdentity
        mac-LogicalChannelPriority
    }

UL-LogicalChannelMappingList ::=
    SEQUENCE (SIZE (1..2)) OF
        UL-LogicalChannelMapping

UL-RLC-Mode ::=
    CHOICE {
        ul-AM-RLC-Mode
        ul-UM-RLC-Mode
        ul-TM-RLC-Mode
        spare
    }

UL-TransportChannelType ::=
    ENUMERATED {
        dch, rach, cpch, usch }

```

```
UL-UM-RLC-Mode ::= SEQUENCE {  
| transmissionRLC-Discard TransmissionRLC-Discard OPTIONAL  
| }  
END
```

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

TS25.331 CR 297r1

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **RAN#8**
 list expected approval meeting # here ↑

for approval
 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: (U)SIM ME UTRAN / Radio Core Network
 (at least one should be marked with an X)

Source: **NTT DoCoMo** **Date:** **2000-4-10**

Subject: **Usage of Transport CH ID**

Work item:

Category: F Correction **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
 Release 00
 (only one category shall be marked with an X)

Reason for change: The description of the behaviour in UE is added when the UE updates RACH/FACH/PCH info in SIB5 and SIB6 for a certain Secondary CCPCH. Transport CH ID is added for each RACH and FACH/PCH in PRACH and SCCPCH in order to indicate which transport channel is the target transport CH to update.

Clauses affected: **8.1.1.5.5, 8.1.1.5.6, 10.3.6.39, 10.3.6.53**

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.

8.1.1.5.5 System Information Block type 5

The UE should store all relevant IEs included in this system information block. The UE shall also:

- if IEs containing scheduling information for other system information blocks are included, the UE shall act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.
- if the IE "Frequency info" is included, tune to the frequency given by this IE and use it as the active frequency.
- replace the TFS of the transport channel which has a same transport CH 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.
- start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only).
- start to receive the physical channel of type PICH using the parameters given by the IE "PICH info".
- start to monitor its paging occasions on the PICH.
- start to receive the physical channel(s) of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info".

8.1.1.5.6 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 also

- if IEs containing scheduling information for other system information blocks are included, the UE shall act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.
- if the IE "Frequency info" is included, tune to the frequency given by this IE and use it as the active frequency.
- replace the TFS of the transport channel which has a same transport CH 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 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". 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).
- start to receive the physical channel of type PICH using the parameters given by the IE "PICH info". 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 PICH.
- start to receive the physical channel(s) of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info". 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.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

10.3.6.39 PRACH system information

Information element	Need	Multi	Type and reference	Semantics description
PRACH system information	MP	1 .. <maxPRA CHcount>		
>PRACH info	MP		PRACH info (for RACH) 10.3.6.36	
> Transport channel identity	MP		Transport channel identity 10.3.5.16	
>RACH TFS	MP		Transport format set 10.3.5.20	
>RACH TFCS	MP		Transport Format Combination Set 10.3.5.17	
>CHOICE <i>mode</i>	MP			
>>FDD				
>>>PRACH partitioning	MP		PRACH partitioning 10.3.3.37	
>>>Persistence scaling factors	OP		Persistence scaling factors 10.3.6.33	
>>>AC-to-ASC mapping	OP		AC-to-ASC mapping 10.3.6.1	Only present in SIB 5
>>>Primary CPICH TX power	MP		Primary CPICH TX power 10.3.6.42	
>>>Constant value	MP		Constant value 10.3.6.9	
>>>PRACH power offset	MP		PRACH power offset 10.3.6.38	
>>>RACH transmission parameters	MP		RACH transmission parameters 10.3.6.49	
>>>AICH info	MP		AICH info 10.3.6.2	
>>TDD				
>>>ASC info	OP		ASC info 10.3.6.5	

Multi bound	Explanation
<i>MaxPRACHcount</i>	Maximum number of PRACHs

10.3.6.53 Secondary CCPCH system information

Information element	Need	Multi	Type and reference	Semantics description
Secondary CCPCH system information	MP	1 to <maxSCCPCHcount>		
>Secondary CCPCH info	MP		Secondary CCPCH info 10.3.6.52	Note 1
>TFCS	MP		Transport format set 10.3.5.20	For FACHs and PCH
>FACH/PCH information	MP	1 to <maxFACHcount>		
>>Transport channel identity	MP		Transport channel identity 10.3.5.16	
>>TFS	MP		Transport format set 10.3.5.20	For each FACHs and PCH Note 2
>>CTCH indicator	MP		Boolean	The value "TRUE" indicates that a CTCH is mapped on the FACH, and "FALSE" that no CTCH is mapped.
>PICH info	CV		PICH info 10.3.6.34	PICH info is present only when PCH is multiplexed on Secondary CCPCH

NOTE 1: The secondary CCPCH carrying the PCH shall be the first Secondary CCPCH information in the list.

NOTE 2: TFS for PCH shall be the first FACH/PCH information in the list if PCH exists.

Multi bound	Explanation
<i>MaxSCCPCHcount</i>	Maximum number of secondary CCPCHs
<i>MaxFACHcount</i>	Maximum number of FACH and PCHs mapped onto secondary CCPCHs

11.3.6 Physical channel information elements

PhysicalChannel-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

```

maxAddRLcount,
maxAP-SigNum,
maxAP-SubCH,
maxChanCount,
maxCodeCount,
maxCodeNum,
maxCodeNumComp-1,
maxCombineSet,
maxCPCH-SetCount,
maxDelRLcount,
maxDPDCHcount,
maxFACH-Count,
maxMidambleShift-1,
maxNoCodeGroups,
maxNoTFCI-Groups,
maxPCPCHs,
maxPDSCHcount,
maxPRACHcount,
maxPUSCHcount,
maxReplaceCount,
maxRLcount,

```

```

maxSCCPCHcount,
maxSigNum,
maxSF-Num,
maxSubChNum,
maxTFCI-2-Combs,
maxTFs,
maxTimeslotCount,
maxTScout,
maxUL-CCTrCHcount
FROM Constant-definitions

ActivationTime
FROM UserEquipment-IEs

CPCH-SetID,
FACH-PCH-InformationList,
TFCS,
TFCS-Identity,
TransportChannelIdentity,
TransportFormatSet
FROM TransportChannel-IEs

SIB-ReferenceListFACH
FROM Other-IEs;

AC-To-ASC-Mapping ::= INTEGER (0..7)

AC-To-ASC-MappingTable ::= SEQUENCE (SIZE (7)) OF
AC-To-ASC-Mapping

AccessServiceClass ::= SEQUENCE {
availableSignatureStartIndex INTEGER (0..15),
availableSignatureEndIndex INTEGER (0..15),
availableSubChannelStartIndex INTEGER (0..11),
availableSubChannelEndIndex INTEGER (0..11)
}

AccessServiceClassIndex ::= INTEGER (1..8)

AICH-Info ::= SEQUENCE {
secondaryScramblingCode SecondaryScramblingCode OPTIONAL,
channelisationCode256 ChannelisationCode256,
sttd-Indicator STTD-Indicator,
aich-TransmissionTiming AICH-TransmissionTiming
}

AICH-PowerOffset ::= INTEGER (-10..5)

AICH-TransmissionTiming ::= ENUMERATED {
e0, e1 }

AllocationPeriodInfo ::= SEQUENCE {
allocationActivationTime INTEGER (1..256),
allocationDuration INTEGER (1..256)
}

AP-AICH-ChannelisationCode ::= INTEGER (0..255)

AP-AICH-ScramblingCode ::= INTEGER (0..255)

AP-PreambleScramblingCode ::= INTEGER (0..255)

AP-Signature ::= INTEGER (0..15)

AP-Subchannel ::= INTEGER (0..11)

ASC ::= SEQUENCE {
accessServiceClass AccessServiceClass,
repetitionPeriodAndOffset ASC-RepetitionPeriodAndOffset OPTIONAL
-- TABULAR: The offset is nested in the repetition period
}

ASC-Info ::= SEQUENCE {
asc-List ASC-List
}

ASC-List ::= SEQUENCE (SIZE (1..8)) OF
ASC

ASC-RepetitionPeriodAndOffset ::= CHOICE {
rp1 NULL,
rp2 INTEGER (0..1),
rp4 INTEGER (0..3),

```

```

rp8                                INTEGER (0..7)
}
AvailableAP-SignatureList ::=      SEQUENCE (SIZE (1..maxAP-SigNum)) OF
                                     AP-Signature
AvailableAP-SubchannelList ::=      SEQUENCE (SIZE (1..maxAP-SubCH)) OF
                                     AP-Subchannel
AvailableMinimumSF-VCAM ::=         SEQUENCE {
    minimumSpreadingFactor           MinimumSpreadingFactor,
    nf-Max                           NF-Max,
    maxAvailablePCPCH-Number         MaxAvailablePCPCH-Number,
    availableAP-SignatureList        AvailableAP-SignatureList,
    availableAP-SubchannelList       AvailableAP-SubchannelList
}                                     OPTIONAL
AvailableMinimumSF-ListUCSM ::=     SEQUENCE (SIZE (1..maxSF-Num)) OF
                                     MinimumSpreadingFactor
AvailableMinimumSF-ListVCAM ::=     SEQUENCE (SIZE (1..maxSF-Num)) OF
                                     AvailableMinimumSF-VCAM
AvailableSignatureList ::=          SEQUENCE (SIZE (1..maxSigNum)) OF
                                     Signature
AvailableSubChannelNumber ::=       INTEGER (0..11)
AvailableSubChannelNumberList ::=   SEQUENCE (SIZE (1..maxSubChNum)) OF
                                     AvailableSubChannelNumber
BlockSTTD-Indicator ::=            BOOLEAN
BurstType ::=                      ENUMERATED {
    short1, long2 }
BurstType1 ::=                    ENUMERATED { ms4, ms8, ms16 }
BurstType2 ::=                    ENUMERATED { ms3, ms6 }
CCTrCH-PowerControlInfo ::=        SEQUENCE {
    tfcs-Identity                    TFCS-Identity
    ul-DPCH-PowerControlInfo         UL-DPCH-PowerControlInfo
}                                     OPTIONAL,
CD-AccessSlotSubchannel ::=         INTEGER (0..11)
CD-AccessSlotSubchannelList ::=     SEQUENCE (SIZE (1..maxSubChNum)) OF
                                     CD-AccessSlotSubchannel
CD-CA-ICH-ChannelisationCode ::=    INTEGER (0..255)
CD-CA-ICH-ScramblingCode ::=        INTEGER (0..255)
CD-PreambleScramblingCode ::=       INTEGER (0..255)
CD-SignatureCode ::=               INTEGER (0..15)
CD-SignatureCodeList ::=            SEQUENCE (SIZE (1..maxSigNum)) OF
                                     CD-SignatureCode
CellParametersID ::=               INTEGER (0..127)
CFN ::=                             INTEGER (0..255)
ChannelAssignmentActive ::=         CHOICE {
    notActive                         NULL,
    isActive                          VCAM-Info
}
ChannelisationCode256 ::=           INTEGER (0..255)
ChannelReqParamsForUCSM ::=         SEQUENCE {
    availableAP-SignatureList        AvailableAP-SignatureList,
    availableAP-SubchannelList       AvailableAP-SubchannelList
}
ChannelReqParamsForUCSM-List ::=    SEQUENCE (SIZE (1..maxSigNum)) OF
                                     ChannelReqParamsForUCSM
ClosedLoopTimingAdjMode ::=        ENUMERATED {
    slot1, slot2 }

```

```

CodeNumber ::=                               INTEGER (0..maxCodeNum)

CodeNumberDSCH ::=                           INTEGER (0..maxCodeNumComp-1)

CodeRange ::=                                SEQUENCE {
    pdsch-CodeMapList          PDSCH-CodeMapList,
    codeNumberStart            CodeNumberDSCH,
    codeNumberStop             CodeNumberDSCH
}

CodeWordSet ::=                               ENUMERATED {
    longCWS,
    mediumCWS,
    shortCWS,
    ssdtOff }

CommonTimeslotInfo ::=                       SEQUENCE {
    secondInterleavingMode     SecondInterleavingMode           OPTIONAL,
    tfci-Coding                TFCI-Coding                     OPTIONAL,
    puncturingLimit            PuncturingLimit,
    repetitionPeriodAndLength  RepetitionPeriodAndLength       OPTIONAL
}

CommonTimeslotInfoSCCPCH ::=                 SEQUENCE {
    secondInterleavingMode     SecondInterleavingMode           OPTIONAL,
    tfci-Coding                TFCI-Coding                     OPTIONAL,
    puncturingLimit            PuncturingLimit,
    repetitionPeriodLengthAndOffset RepetitionPeriodLengthAndOffset OPTIONAL
}

CompressedModeMethod ::=                     CHOICE {
    puncturing                  NULL,
    sf-2                        ScramblingCodeChange,
    upperLayerScheduling        NULL,
    noCompressing               NULL
}

-- Values from -10 to 10 are used in Release 99
ConstantValue ::=                           INTEGER (-10..21)

CPCH-PersistenceLevelsList ::=               SEQUENCE (SIZE (1..maxCPCH-SetCount)) OF
    CPCH-PersistenceLevels

CPCH-PersistenceLevels ::=                   SEQUENCE {
    cpch-SetID                  CPCH-SetID,
    dynamicPersistenceLevelTF-List DynamicPersistenceLevelTF-List
}

CPCH-SetInfo ::=                             SEQUENCE {
    cpch-SetID                  CPCH-SetID,
    transportFormatSet          TransportFormatSet,
    ap-PreambleScramblingCode   AP-PreambleScramblingCode,
    ap-AICH-ScramblingCode      AP-AICH-ScramblingCode,
    ap-AICH-ChannelisationCode  AP-AICH-ChannelisationCode,
    cd-PreambleScramblingCode   CD-PreambleScramblingCode,
    cd-CA-ICH-ScramblingCode    CD-CA-ICH-ScramblingCode,
    cd-CA-ICH-ChannelisationCode CD-CA-ICH-ChannelisationCode,
    cd-AccessSlotSubchannelList CD-AccessSlotSubchannelList   OPTIONAL,
    cd-SignatureCodeList        CD-SignatureCodeList           OPTIONAL,
    slotFormat                  SlotFormat,
    n-StartMessage              N-StartMessage,
    channelAssignmentActive      ChannelAssignmentActive,
    -- TABULAR: VCAM info has been nested inside ChannelAssignmentActive,
    -- which in turn is mandatory since it's only a binary choice.
    cpch-StatusIndicationMode   CPCH-StatusIndicationMode,
    pcpch-ChannelInfoList       PCPCH-ChannelInfoList
}

CPCH-SetInfoList ::=                         SEQUENCE (SIZE (1..maxCPCH-SetCount)) OF
    CPCH-SetInfo

CPCH-StatusIndicationMode ::=               ENUMERATED {
    pcpch-Availability,
    pcpch-AvailabilityAndMinAvailableSF }

-- Actual value = IE value * 512, only values from 0 to 599 used in Release 99.
DefaultDPCH-OffsetValue ::=                 INTEGER (0..1023)

-- Actual value = IE value * 0.5
DeltaSIR ::=                                INTEGER (0..15)

DL-CCTrCh ::=                               SEQUENCE {
    individualTS-InfoDL-CCTrCHList IndividualTS-InfoDL-CCTrCHList
}

```

```

}

DL-CCTrCh-HO ::=
    tfcs-Identity
    individualTS-InfoDL-CCTrChList
}
SEQUENCE {
    TFCS-Identity,
    IndividualTS-InfoDL-CCTrChList
}

DL-CCTrChList ::=
    single
    handover
}
CHOICE {
    DL-CCTrCh,
    SEQUENCE (SIZE (1..8)) OF
        DL-CCTrCh-HO
}

DL-ChannelisationCode ::=
    secondaryScramblingCode
    codeNumber
}
SEQUENCE {
    SecondaryScramblingCode
    CodeNumber
} OPTIONAL,

DL-ChannelisationCodeList ::=
SEQUENCE (SIZE(1..maxChanCount)) OF
    DL-ChannelisationCode

DL-CommonInformation ::=
    dl-DPCH-InfoCommon
    modeSpecificInfo
    fdd
        defaultDPCH-OffsetValue
        dpch-CompressedModeInfo
        tx-DiversityMode
        ssdt-Information
    },
    tdd
        ul-TimingAdvance
}
}
SEQUENCE {
    DL-DPCH-InfoCommon
    CHOICE {
        SEQUENCE {
            DefaultDPCH-OffsetValue
            DPCH-CompressedModeInfo
            TX-DiversityMode
            SSDT-Information
        }
        SEQUENCE {
            UL-TimingAdvance
        }
    }
} OPTIONAL,
OPTIONAL,
OPTIONAL,
OPTIONAL

DL-CommonInformationPredef ::=
    dl-DPCH-InfoCommon
    modeSpecificInfo
    fdd
        defaultDPCH-OffsetValue
    },
    tdd
}
}
SEQUENCE {
    DL-DPCH-InfoCommon
    CHOICE {
        SEQUENCE {
            DefaultDPCH-OffsetValue
        }
        NULL
    }
} OPTIONAL,
OPTIONAL

DL-DPCH-SlotFormat ::=
ENUMERATED {
    slf0, slf1 }

DL-DPCH-InfoCommon ::=
    dl-DPCH-PowerControlInfo
    spreadingFactor
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
    positionFixedOrFlexible
    tfci-Existence
}
SEQUENCE {
    DL-DPCH-PowerControlInfo,
    SF-DL-DPCH,
    PositionFixedOrFlexible,
    BOOLEAN
}

DL-DPCH-InfoPerRL ::=
    fdd
        pCPICH-UsageForChannelEst
        secondaryCPICH-Info
        dl-ChannelisationCodeList
        tpc-CombinationIndex
        ssdt-CellIdentity
        closedLoopTimingAdjMode
    },
    tdd
        dl-CCTrChList
}
CHOICE {
    SEQUENCE {
        PCPICH-UsageForChannelEst
        SecondaryCPICH-Info
        DL-ChannelisationCodeList,
        TPC-CombinationIndex,
        SSDT-CellIdentity
        ClosedLoopTimingAdjMode
    }
    SEQUENCE {
        DL-CCTrChList
    }
} OPTIONAL,
OPTIONAL,
OPTIONAL,
OPTIONAL

DL-DPCH-PowerControlInfo ::=
    modeSpecificInfo
    fdd
        dpc-Mode
    },
    tdd
}
}
SEQUENCE {
    CHOICE {
        SEQUENCE {
            DPC-Mode
        }
        NULL
    }
} OPTIONAL

DL-FrameType ::=
ENUMERATED {
    dl-FrameTypeA, dl-FrameTypeB }

```

```

DL-InfoPerRL ::=
    dl-InformationPerRL
    dl-DPCH-InfoPerRL
}

DL-InfoPerRL-List ::=
    SEQUENCE (SIZE (1..maxRLcount)) OF
        DL-InfoPerRL

DL-InformationPerRL ::=
    modeSpecificInfo
    fdd
        primaryCPICH-Info
        pdsch-SHO-DCH-Info
        pdsch-CodeMapping
    },
    tdd
        primaryCCPCH-Info
    },
    dl-DPCH-InfoPerRL
    secondaryCCPCH-Info
    sib-ReferenceList
}

DL-InformationPerRL-List ::=
    SEQUENCE (SIZE (1..maxRLcount)) OF
        DL-InformationPerRL

DL-InformationPerRL-Short ::=
    modeSpecificInfo
    fdd
        primaryCPICH-Info
    },
    tdd
        NULL
    },
    dl-DPCH-InfoPerRL
}

DL-OuterLoopControl ::=
    ENUMERATED {
        increaseAllowed, increaseNotAllowed }

DL-PDSCH-Information ::=
    pdsch-SHO-DCH-Info
    pdsch-CodeMapping
}

DL-TS-ChannelisationCode ::=
    ENUMERATED {
        cc16-1, cc16-2, cc16-3, cc16-4,
        cc16-5, cc16-6, cc16-7, cc16-8,
        cc16-9, cc16-10, cc16-11, cc16-12,
        cc16-13, cc16-14, cc16-15, cc16-16 }

DL-TS-ChannelisationCodeList ::=
    SEQUENCE (SIZE (1..maxCodeCount)) OF
        DL-TS-ChannelisationCode

DPC-Mode ::=
    ENUMERATED {
        singleTPC,
        tpcTripletInSoft }

-- The actual value of DPCCH power offset is the value of this IE * 2.
DPCCH-PowerOffset ::=
    INTEGER (-82..-3)

DPCH-CompressedModeInfo ::=
    SEQUENCE {
        tgl
            TGL,
        cfn
            CFN,
        sn
            Timeslot,
        tgp1
            TGP,
        tgp2
            TGP,
        tgd
            TGD,
        pd
            PD,
        pcm
            PCM,
        prn
            PRM,
        ul-DL-Mode
            UL-DL-Mode,
        compressedModeMethod
            CompressedModeMethod,
        -- TABULAR: Scrambling code change is nested inside CompressedModeMethod
        dl-FrameType
            DL-FrameType,
        deltaSIR
            DeltaSIR,
        deltaSIRAfter
            DeltaSIR
    }

DPDCH-ChannelisationCode ::=
    ENUMERATED {
        e4, e8, e16, e32,
        e64, e128, e256 }

```

```

DPDCH-ChannelisationCodeList ::= SEQUENCE (SIZE (1..maxDPDCHcount)) OF
    DPDCH-ChannelisationCode

DSCH-Mapping ::= SEQUENCE {
    maxTFCI-Field2Value MaxTFCI-Field2Value,
    spreadingFactor SF-PDSCH,
    codeNumber CodeNumberDSCH,
    multiCodeInfo MultiCodeInfo
}

DSCH-MappingList ::= SEQUENCE (SIZE (1..maxNoTFCI-Groups)) OF
    DSCH-Mapping

DSCH-RadioLinkIdentifier ::= INTEGER (0..511)

DurationTimeInfo ::= INTEGER (1..4096)

DynamicPersistenceLevel ::= INTEGER (1..8)

DynamicPersistenceLevelList ::= SEQUENCE (SIZE (1..maxPRACHcount)) OF
    DynamicPersistenceLevel

DynamicPersistenceLevelTF-List ::= SEQUENCE (SIZE (1..maxTFs)) OF
    DynamicPersistenceLevel

FACH-PCH-Information ::= SEQUENCE {
    transportCHIdentity TransportChannelIdentity,
    transportFormatSet TransportFormatSet,
    ctch-Indicator BOOLEAN
}

FACH-PCH-InformationList ::= SEQUENCE (SIZE(1..maxFACH-Count)) OF
    FACH-PCH-Information

FBI-BitNumber ::= INTEGER (1..2)

FrequencyInfo ::= SEQUENCE {
    modeSpecificInfo CHOICE {
        fdd SEQUENCE {
            uarfcn-UL UARFCN-Nu,
            uarfcn-DL UARFCN-Nd OPTIONAL
        },
        tdd SEQUENCE {
            uarfcn-Nt UARFCN-Nt
        }
    }
}

IndividualTimeslotInfo ::= SEQUENCE {
    timeslotNumber Timeslot,
    tfci-Existence BOOLEAN,
    -- The IE above is CH, but since it is a boolean it's kept mandatory.
    burstType BurstType,
    midambleShift MidambleShift
}

IndividualTS-InfoDL-CCTrCH ::= SEQUENCE {
    individualTimeslotInfo IndividualTimeslotInfo,
    dl-TS-ChannelisationCodeList DL-TS-ChannelisationCodeList
}

IndividualTS-InfoDL-CCTrCHList ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
    IndividualTS-InfoDL-CCTrCH

IndividualTS-InfoPDSCH ::= SEQUENCE {
    individualTimeslotInfo IndividualTimeslotInfo,
    pdsch-ChannelisationCode PDSCH-ChannelisationCode
}

IndividualTS-InfoPDSCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
    IndividualTS-InfoPDSCH

IndividualTS-InfoPUSCH ::= SEQUENCE {
    individualTimeslotInfo IndividualTimeslotInfo,
    pusch-ChannelisationCode PUSCH-ChannelisationCode
}

IndividualTS-InfoPUSCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
    IndividualTS-InfoPUSCH

IndividualTS-InfoUL-CCTrCH ::= SEQUENCE {
    individualTimeslotInfo IndividualTimeslotInfo,
    channelisationCode UL-TS-ChannelisationCode
}

```



```

}

IndividualTS-InfoUL-CCTrCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
    IndividualTS-InfoUL-CCTrCH

IndividualTS-Interference ::= SEQUENCE {
    timeslot Timeslot,
    ul-TimeslotInterference UL-Interference
}

IndividualTS-InterferenceList ::= SEQUENCE (SIZE (1..maxTScount)) OF
    IndividualTS-Interference

-- Value range of -50..33 is used for Release 99
MaxAllowedUL-TX-Power ::= INTEGER (-50..77)

MaxAvailablePCPCH-Number ::= INTEGER (1..64)

MaxTFCI-Field2Value ::= INTEGER (1..1023)

MidambleConfiguration ::= SEQUENCE {
    burstType1 BurstType1,
    burstType2 BurstType2
}

MidambleShift ::= INTEGER (0..maxMidambleShift-1)

MinimumSpreadingFactor ::= ENUMERATED {
    sf4, sf8, sf16, sf32,
    sf64, sf128, sf256 }

MultiCodeInfo ::= INTEGER (1..16)

N-GAP ::= ENUMERATED {
    f2, f4, f8 }

N-PCH ::= INTEGER (1..8)

N-StartMessage ::= INTEGER (1..8)

-- **TODO**, not defined yet
NB01Max ::= SEQUENCE {
}

-- **TODO**, not defined yet
NB01Min ::= SEQUENCE {
}

NF-Max ::= INTEGER (1..64)

NumberOfFBI-Bits ::= INTEGER (1..2)

PagingIndicatorLength ::= ENUMERATED {
    pi2, pi4, pi8 }

PC-Preamble ::= ENUMERATED {
    pcp0, pcp8 }

PC-PreambleSlotFormat ::= ENUMERATED {
    slf0, slf1 }

PCM ::= ENUMERATED {
    pc-mode0, pc-mode1 }

PCP-Length ::= ENUMERATED {
    as0, as8 }

PCPCH-ChannelInfo ::= SEQUENCE {
    pcpch-UL-ScramblingCode INTEGER (0..255),
    pcpch-DL-ChannelisationCode INTEGER (0..511),
    pcpch-DL-ScramblingCode INTEGER (0..255),
    pcp-Length PCP-Length,
    ucsm-Info UCSM-Info OPTIONAL
}

PCPCH-ChannelInfoList ::= SEQUENCE (SIZE (1..maxPCPCHs)) OF
    PCPCH-ChannelInfo

PCPICH-UsageForChannelEst ::= ENUMERATED {
    mayBeUsed,
    shallNotBeUsed }

-- Here the value 0 represents "infinity" in the tabular notation.

```

```

PD ::= INTEGER (0..35)

PDSCH-ChannelisationCode ::= ENUMERATED {
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

PDSCH-CodeInfo ::= SEQUENCE {
    spreadingFactor
    codeNumber
    multiCodeInfo
}

PDSCH-CodeInfoList ::= SEQUENCE (SIZE (1..maxTFCI-2-Combs)) OF
    PDSCH-CodeInfo

PDSCH-CodeMap ::= SEQUENCE {
    spreadingFactor
    multiCodeInfo
}

PDSCH-CodeMapList ::= SEQUENCE (SIZE (1..maxNoCodeGroups)) OF
    PDSCH-CodeMap

PDSCH-CodeMapping ::= SEQUENCE {
    dl-ScramblingCode
    signallingMethod
    codeRange
    tfci-Range
    explicit
    replace
}

PDSCH-Info ::= SEQUENCE {
    tfcs-Identity OPTIONAL,
    timeInfo
    commonTimeslotInfo OPTIONAL,
    individualTimeslotInfoList OPTIONAL
}

PDSCH-SHO-DCH-Info ::= SEQUENCE {
    dsch-RadioLinkIdentifier
    tfci-CombiningSet
    rl-IdentifierList OPTIONAL
}

PDSCH-SysInfo ::= SEQUENCE {
    pdsch-Info
    dsch-TFS OPTIONAL
}

PDSCH-SysInfoList ::= SEQUENCE (SIZE (1..maxPDSCHcount)) OF
    PDSCH-SysInfo

PersistenceScalingFactor ::= ENUMERATED {
    psf0-9, psf0-8, psf0-7, psf0-6,
    psf0-5, psf0-4, psf0-3, psf0-2 }

PersistenceScalingFactorList ::= SEQUENCE (SIZE (1..6)) OF
    PersistenceScalingFactor

PI-CountPerFrame ::= ENUMERATED {
    e18, e36, e72, e144 }

PICH-Info ::= CHOICE {
    fdd SEQUENCE {
        secondaryScramblingCode OPTIONAL,
        channelisationCode256
        pi-CountPerFrame
        sttd-Indicator
    },
    tdd SEQUENCE {
        channelisationCode OPTIONAL,
        timeslot OPTIONAL,
        burstType
        midambleShift OPTIONAL,
        repetitionPeriodLengthOffset OPTIONAL,
        pagingIndicatorLength OPTIONAL,
        n-GAP OPTIONAL,
        n-PCH OPTIONAL
    }
}

```

```

}
PICH-PowerOffset ::= INTEGER (-10..5)
PilotBits128 ::= ENUMERATED {
    pb4, pb8 }
PilotBits256 ::= ENUMERATED {
    pb2, pb4, pb8 }
PositionFixedOrFlexible ::= ENUMERATED {
    fixed,
    flexible }
PowerControlAlgorithm ::= CHOICE {
    algorithm1
    algorithm2
    NULL
}
PowerOffsetP0 ::= INTEGER (1..8)
PRACH-Midamble ::= ENUMERATED {
    direct,
    direct-Inverted }
PRACH-Partitioning ::= SEQUENCE (SIZE (1..8)) OF
    AccessServiceClass
PRACH-PowerOffset ::= SEQUENCE {
    powerOffsetP0
    preambleRetransMax
}
PRACH-RACH-Info ::= SEQUENCE {
    modeSpecificInfo
    fdd
        availableSignatureList
        availableSF
        scramblingCodeWordNumber
        puncturingLimit
        availableSubChannelNumberList
    },
    tdd
        timeslot
        channelisationCode
        prach-Midamble
}
}
}
PRACH-SystemInformation ::= SEQUENCE {
    prach-RACH-Info
    transportCHIdentity
    rach-TransportFormatSet
    rach-TFCS
    modeSpecificInfo
    fdd
        prach-Partitioning
        persistenceScalingFactorList
        ac-To-ASC-MappingTable
        primaryCPICH-TX-Power
        constantValue
        prach-PowerOffset
        rach-TransmissionParameters
        aich-Info
    },
    tdd
        asc-Info
}
}
PRACH-SystemInformationList ::= SEQUENCE (SIZE (1..maxPRACHcount)) OF
    PRACH-SystemInformation
PreambleRetransMax ::= INTEGER (1..64)
-- **TODO**, tabular definition a little unclear
PreDefPhyChConfiguration ::= SEQUENCE {
    ul-DPCH-InfoPredef
    dl-CommonInformationPredef
}

```

```

PrimaryCCPCH-Info ::=
    CHOICE {
        fdd
            tx-DiversityIndicator
        },
        tdd
            timeslot
            cellParametersID
            syncCase
            repetitionPeriodLengthAndOffset
    OPTIONAL,
        blockSTTD-Indicator
    }

PrimaryCCPCH-InfoSI ::=
    CHOICE {
        fdd
            tx-DiversityIndicator
        },
        tdd
            repetitionPeriodLengthAndOffset
            blockSTTD-Indicator
    }

PrimaryCCPCH-TX-Power ::=
    INTEGER (6..43)

PrimaryCPICH-Info ::=
    SEQUENCE {
        primaryScramblingCode
    }

-- Value range -10 .. 50 used for Release 99
PrimaryCPICH-TX-Power ::=
    INTEGER (-10..53)

PrimaryScramblingCode ::=
    INTEGER (0..511)

PRM ::=
    ENUMERATED {
        pr-mode0, pr-model
    }

PuncturingLimit ::=
    ENUMERATED {
        p10-40, p10-44, p10-48, p10-52, p10-56,
        p10-60, p10-64, p10-68, p10-72, p10-76,
        p10-80, p10-84, p10-88, p10-92, p10-96, p11
    }

PUSCH-AllocationAssignment ::=
    SEQUENCE {
        pusch-PowerControlInfo
        timeInfo
        commonTimeslotInfo
        timeslotInfoList
    }

PUSCH-ChannelisationCode ::=
    ENUMERATED {
        cc1-1, cc2-1, cc2-2,
        cc4-1, cc4-2, cc4-3, cc4-4,
        cc8-1, cc8-2, cc8-3, cc8-4,
        cc8-5, cc8-6, cc8-7, cc8-8,
        cc16-1, cc16-2, cc16-3, cc16-4,
        cc16-5, cc16-6, cc16-7, cc16-8,
        cc16-9, cc16-10, cc16-11, cc16-12,
        cc16-13, cc16-14, cc16-15, cc16-16
    }

PUSCH-Info ::=
    SEQUENCE {
        pusch-Allocation
        pusch-AllocationPending
        pusch-AllocationAssignment
    }

PUSCH-PowerControlInfo ::=
    SEQUENCE {
        ul-TargetSIR
    }

PUSCH-SysInfo ::=
    SEQUENCE {
        pusch-Info
        usch-TFS
    }

PUSCH-SysInfoList ::=
    SEQUENCE (SIZE (1..maxPUSCHcount)) OF
        PUSCH-SysInfo

RACH-TransmissionParameters ::=
    SEQUENCE {
        mmax
        nb0lMin
    }

```

```

    nb01Max                NB01Max
}

ReducedScramblingCodeNumber ::= INTEGER (0..8191)

RepetitionPeriodAndLength ::= CHOICE {
    repetitionPeriod1      NULL,
    repetitionPeriod2      INTEGER (1..1),
    -- repetitionPeriod2 could just as well be NULL also.
    repetitionPeriod4      INTEGER (1..3),
    repetitionPeriod8      INTEGER (1..7),
    repetitionPeriod16     INTEGER (1..15),
    repetitionPeriod32     INTEGER (1..31),
    repetitionPeriod64     INTEGER (1..63)
}

RepetitionPeriodLengthAndOffset ::= CHOICE {
    repetitionPeriod1      NULL,
    repetitionPeriod2      SEQUENCE {
        length             NULL,
        offset             INTEGER (0..1)
    },
    repetitionPeriod4      SEQUENCE {
        length             INTEGER (1..3),
        offset             INTEGER (0..3)
    },
    repetitionPeriod8      SEQUENCE {
        length             INTEGER (1..7),
        offset             INTEGER (0..7)
    },
    repetitionPeriod16     SEQUENCE {
        length             INTEGER (1..15),
        offset             INTEGER (0..15)
    },
    repetitionPeriod32     SEQUENCE {
        length             INTEGER (1..31),
        offset             INTEGER (0..31)
    },
    repetitionPeriod64     SEQUENCE {
        length             INTEGER (1..63),
        offset             INTEGER (0..63)
    }
}

ReplacedPDSCH-CodeInfo ::= SEQUENCE {
    tfci-Field2           MaxTFCI-Field2Value,
    spreadingFactor       SF-PDSCH,
    codeNumber            CodeNumberDSCH,
    multiCodeInfo        MultiCodeInfo
}

ReplacedPDSCH-CodeInfoList ::= SEQUENCE (SIZE (1..maxReplaceCount)) OF
    ReplacedPDSCH-CodeInfo

RepPerLengthOffset-PICH ::= CHOICE {
    rpp4-2                INTEGER (0..3),
    rpp8-2                INTEGER (0..7),
    rpp8-4                INTEGER (0..7),
    rpp16-2               INTEGER (0..15),
    rpp16-4               INTEGER (0..15),
    rpp32-2               INTEGER (0..31),
    rpp32-4               INTEGER (0..31),
    rpp64-2               INTEGER (0..63),
    rpp64-4               INTEGER (0..63)
}

RL-AdditionInformation ::= SEQUENCE {
    primaryCPICH-Info     PrimaryCPICH-Info,
    dl-DPCH-InfoPerRL    DL-DPCH-InfoPerRL,
    tfci-CombiningIndicator BOOLEAN,
    secondaryCCPCH-Info   SecondaryCCPCH-Info
    sib-ReferenceListFACH SIB-ReferenceListFACH
}

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

RL-IdentifierList ::= SEQUENCE (SIZE(1..maxCombineSet)) OF
    PrimaryCPICH-Info

RL-RemovalInformation ::= SEQUENCE {
    primaryCPICH-Info     PrimaryCPICH-Info
}

```

```

RL-RemovalInformationList ::= SEQUENCE (SIZE (1..maxDelRLcount)) OF
                               RL-RemovalInformation

S-Field ::= ENUMERATED {
              e1bit, e2bits }

SCCPCH-ChannelisationCode ::= ENUMERATED {
                                ccl6-1, ccl6-2, ccl6-3, ccl6-4,
                                ccl6-5, ccl6-6, ccl6-7, ccl6-8,
                                ccl6-9, ccl6-10, ccl6-11, ccl6-12,
                                ccl6-13, ccl6-14, ccl6-15, ccl6-16 }

SCCPCH-SystemInformation ::= SEQUENCE {
    secondaryCCPCH-Info      SecondaryCCPCH-Info,
    tfcs                    TFCS,
    fach-PCH-InformationList FACH-PCH-InformationList,
    pich-Info                PICH-Info
}
                                                                    OPTIONAL

SCCPCH-SystemInformationList ::= SEQUENCE (SIZE (1..maxSCCPCHcount)) OF
                                   SCPCH-SystemInformation

ScramblingCodeChange ::= ENUMERATED {
                            codeChange, noCodeChange }

ScramblingCodeType ::= ENUMERATED {
                          shortSC,
                          longSC }

ScramblingCodeWordNumber ::= INTEGER (0..15)

SecondaryCCPCH-Info ::= SEQUENCE {
    selectionIndicator      SelectionIndicator
                                                                    OPTIONAL,
    -- The IE above is conditional on the logical channel type.
    modeSpecificInfo       CHOICE {
        fdd                 SEQUENCE {
            pCPICH-UsageForChannelEst PCPICH-UsageForChannelEst,
            secondaryCPICH-Info       SecondaryCPICH-Info
                                                                    OPTIONAL,
            secondaryScramblingCode   SecondaryScramblingCode
                                                                    OPTIONAL,
            sttd-Indicator            STTD-Indicator,
            sf-AndCodeNumber          SF-AndCodeNumber,
            pilotSymbolExistence      BOOLEAN,
            tfci-Existence            BOOLEAN,
            positionFixedOrFlexible    PositionFixedOrFlexible,
            timingOffset              TimingOffset
                                                                    OPTIONAL
        },
        tdd                   SEQUENCE {
            -- TABULAR: the offset is included in CommonTimeslotInfoSCCPCH
            commonTimeslotInfo        CommonTimeslotInfoSCCPCH
                                                                    OPTIONAL,
            individualTimeslotInfo     IndividualTimeslotInfo,
            channelisationCode         SCPCH-ChannelisationCode
        }
    }
}

SecondaryCPICH-Info ::= SEQUENCE {
    secondaryDL-ScramblingCode SecondaryScramblingCode
                                                                    OPTIONAL,
    channelisationCode         ChannelisationCode256
}

-- Value range 1..15 used for Release 99
SecondaryScramblingCode ::= INTEGER (1..16)

SecondInterleavingMode ::= ENUMERATED {
                              frameRelated, timeslotRelated }

SelectionIndicator ::= ENUMERATED {
                          on, off }

SF-AndCodeNumber ::= CHOICE {
    sf4      INTEGER (0..3),
    sf8      INTEGER (0..7),
    sf16     INTEGER (0..15),
    sf32     INTEGER (0..31),
    sf64     INTEGER (0..63),
    sf128    INTEGER (0..127),
    sf256    INTEGER (0..255)
}

SF-DL-DPCH ::= CHOICE {
    sfd4     NULL,
    sfd8     NULL,
}

```

```

    sfd16                NULL,
    sfd32                NULL,
    sfd64                NULL,
    sfd128               PilotBits128,
    sfd256               PilotBits256,
    sfd512               NULL
}

SF-PDSCH ::=
    ENUMERATED {
        sfp4, sfp8, sfp16, sfp32,
        sfp64, sfp128, sfp256, spare }

SF-PRACH ::=
    ENUMERATED {
        sfpr32, sfpr64, sfpr128, sfpr256 }

Signature ::=
    INTEGER (0..15)

SlotFormat ::=
    pc-PreambleSlotFormat
    ul-DPCCH-SlotFormat
    dl-DPCCH-SlotFormat
}

SSDT-CellIdentity ::=
    ENUMERATED {
        ssdt-id-a, ssdt-id-b, ssdt-id-c,
        ssdt-id-d, ssdt-id-e, ssdt-id-f,
        ssdt-id-g, ssdt-id-h }

SSDT-Information ::=
    s-Field
    codeWordSet
}

STTD-Indicator ::=
    BOOLEAN

SyncCase ::=
    ENUMERATED {
        sc1, sc2 }

TDD-PICH-CCode ::=
    ENUMERATED {
        ccl16-1, ccl16-2, ccl16-3, ccl16-4,
        ccl16-5, ccl16-6, ccl16-7, ccl16-8,
        ccl16-9, ccl16-10, ccl16-11, ccl16-12,
        ccl16-13, ccl16-14, ccl16-15, ccl16-16 }

TDD-PRACH-CCode ::=
    ENUMERATED {
        cc8-1, cc8-2, cc8-3, cc8-4,
        cc8-5, cc8-6, cc8-7, cc8-8,
        ccl16-1, ccl16-2, ccl16-3, ccl16-4,
        ccl16-5, ccl16-6, ccl16-7, ccl16-8,
        ccl16-9, ccl16-10, ccl16-11, ccl16-12,
        ccl16-13, ccl16-14, ccl16-15, ccl16-16 }

TFC-ControlDuration ::=
    ENUMERATED {
        tfc-cd1, tfc-cd16, tfc-cd24, tfc-cd32,
        tfc-cd48, tfc-cd64, tfc-cd128,
        tfc-cd192, tfc-cd256, tfc-cd512 }

TFCI-Coding ::=
    ENUMERATED {
        tfci-bits-4, tfci-bits-8,
        tfci-bits-16, tfci-bits-32 }

-- **TODO**, not defined
TFCI-CombiningSet ::=
}

TGD ::=
    INTEGER (0..35)

TGL ::=
    INTEGER (1..15)

TGP ::=
    INTEGER (1..256)

TimeInfo ::=
    activationTime
    duration
}

Timeslot ::=
    INTEGER (0..14)

TimeslotList ::=
    SEQUENCE (SIZE (1..14)) OF
        Timeslot

-- Actual value = IE value * 256
TimingOffset ::=
    INTEGER (0..149)

```

```

TPC-CombinationIndex ::=          INTEGER (0..5)
TPC-StepSize ::=                  ENUMERATED {
                                   dB1, dB2 }
TX-DiversityMode ::=              ENUMERATED {
                                   noDiversity,
                                   sttd,
                                   closedLoopMode1,
                                   closedLoopMode2 }
UARFCN-Nd ::=                      INTEGER (0..16383)
UARFCN-Nt ::=                      INTEGER (0..16383)
UARFCN-Nu ::=                      INTEGER (0..16383)
UCSM-Info ::=                     SEQUENCE {
    availableMinimumSF-ListUCSM    AvailableMinimumSF-ListUCSM,
    nf-Max                          NF-Max,
    channelReqParamsForUCSM-List   ChannelReqParamsForUCSM-List      OPTIONAL
}
UL-CCTrCH ::=                     SEQUENCE {
    tfcs-Identity                    TFCS-Identity                OPTIONAL,
    timeInfo                          TimeInfo,
    commonTimeslotInfo                CommonTimeslotInfo          OPTIONAL,
    timeslotInfoList                  IndividualTS-InfoUL-CCTrCH-List  OPTIONAL
}
UL-CCTrCHList ::=                 SEQUENCE (SIZE (1..maxUL-CCTrCHcount)) OF
    UL-CCTrCH
UL-ChannelRequirement ::=          CHOICE {
    ul-DPCH-Info                      UL-DPCH-Info,
    prach-RACH-Info                    PRACH-RACH-Info,
    spare                               NULL
}
UL-DL-Mode ::=                     ENUMERATED {
    dl-Only, ul-DL }
UL-DPCH-SlotFormat ::=             ENUMERATED {
    slf0, slf1, slf2, slf3, slf4, slf5 }
UL-DPCH-Info ::=                  SEQUENCE {
    ul-DPCH-PowerControlInfo           UL-DPCH-PowerControlInfo      OPTIONAL,
    modeSpecificInfo                   CHOICE {
        fdd                            SEQUENCE {
            scramblingCodeType           ScramblingCodeType,
            scramblingCode                UL-ScramblingCode,
            dpdch-ChannelisationCodeList  DPDCH-ChannelisationCodeList,
            tfci-Existence                BOOLEAN,
            fbi-BitNumber                 FBI-BitNumber,
            puncturingLimit               PuncturingLimit
        },
        tdd                              SEQUENCE {
            ul-CCTrCHList                 UL-CCTrCHList
        }
    }
}
UL-DPCH-InfoHO ::=                SEQUENCE {
    ul-DPCH-PowerControlInfoHO         UL-DPCH-PowerControlInfoHO    OPTIONAL,
    modeSpecificInfoHO                 CHOICE {
        fdd                            SEQUENCE {
            scramblingCodeType           ScramblingCodeType,
            scramblingCode                UL-ScramblingCode,
            dpdch-ChannelisationCodeList  DPDCH-ChannelisationCodeList,
            tfci-Existence                BOOLEAN,
            fbi-BitNumber                 FBI-BitNumber,
            puncturingLimit               PuncturingLimit
        },
        tdd                              SEQUENCE {
            ul-CCTrCHList                 UL-CCTrCHList
        }
    }
}
UL-DPCH-InfoPredef ::=             SEQUENCE {
    ul-DPCH-PowerControlInfo           UL-DPCH-PowerControlInfo,
    modeSpecificInfo                   CHOICE {

```



```

        fdd
            maxAllowedUL-TX-Power
            pc-Preamble
            tfci-Existence
            puncturingLimit
        },
        tdd
            NULL
    }
}

UL-DPCH-InfoShort ::=
    ul-DPCH-PowerControlInfo
    modeSpecificInfo
        fdd
            scramblingCodeType
            reducedScramblingCodeNumber
            dpdch-ChannelisationCode
            numberOfFBI-Bits
            -- The IE above is CH, which is questionable as such.
            -- There's no point in making a 1-bit integer optional, however.
        },
        tdd
            NULL
    }
}

UL-DPCH-PowerControlInfo ::=
    fdd
        dpccch-PowerOffset
        pc-Preamble
        powerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd
        maxAllowedUL-TX-Power
        ul-TargetSIR
        handoverGroup
        individualTS-InterferenceList
        dpch-ConstantValue
    }
}

UL-DPCH-PowerControlInfoHO ::=
    fdd
        dpccch-PowerOffset
        powerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd
        maxAllowedUL-TX-Power
        ul-TargetSIR
        handoverGroup
        individualTS-InterferenceList
        dpch-ConstantValue
    }
}

UL-DPCH-PowerControlInfoShort ::=
    modeSpecificInfo
        fdd
            dpccch-PowerOffset
            powerControlAlgorithm
        },
        tdd
            NULL
    }
}

-- Value range -110 .. -70 used for Release 99
UL-Interference ::=
    INTEGER (-110..-47)

-- **TODO**, specification possibly wrong. 777215 mod 16 <> 0...
UL-ScramblingCode ::=
    INTEGER (0..48575)

-- Actual value = (IE value * 0.5) - 11
UL-TargetSIR ::=
    INTEGER (0..62)

UL-TimingAdvance ::=
    INTEGER (0..63)

UL-TS-ChannelisationCode ::=
    ENUMERATED {
        cc1-1, cc2-1, cc2-2,
        cc4-1, cc4-2, cc4-3, cc4-4,
        cc8-1, cc8-2, cc8-3, cc8-4,
    }

```

```
cc8-5, cc8-6, cc8-7, cc8-8,  
cc16-1, cc16-2, cc16-3, cc16-4,  
cc16-5, cc16-6, cc16-7, cc16-8,  
cc16-9, cc16-10, cc16-11, cc16-12,  
cc16-13, cc16-14, cc16-15, cc16-16 }
```

```
VCAM-Info ::=  
    availableMinimumSF-List  
}
```

```
SEQUENCE {  
    AvailableMinimumSF-ListVCAM
```

```
END
```

CHANGE REQUEST				<i>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</i>	
25.331 CR 298r2		Current Version: 3.2.0			
<i>GSM (AA.BB) or 3G (AA.BBB) specification number ↑</i>		<i>↑ CR number as allocated by MCC support team</i>			
For submission to: TSG-RAN #8 <small>list expected approval meeting # here ↑</small>		for approval <input checked="" type="checkbox"/> for information <input type="checkbox"/>		strategic <input type="checkbox"/> non-strategic <input type="checkbox"/> <small>(for SMG use only)</small>	

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 UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 22nd May, 2000

Subject: Transport format combination set

Work item:

Category: <small>(only one category Shall be marked With an X)</small>	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input checked="" type="checkbox"/> D Editorial modification <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
--	--	-----------------	--

Reason for change:

- (1) "Reference TFC number" is renamed to "Reference TFC ID" and the value range is changed from "0 to 15" to "0 to 3".
- (2) The starting value of TFCL is changed to "0" both in field 1 and 2.
- (3) TFCS information is clearly divided in to 2 parts; Normal case and split case. Also clearly divided in to 2 field information; "TFCL field 1 information" and "TFCL field 2 information". For DCH, DSCH(TFCL range method), DSCH(Explicit method) and TFCS removal information are grouped.
- (4) Choice of CTFC range is introduced to limit the number of bits to send, since CTFC value range is small in case of TrCH for DCCHs (2 TFI)+ TrCH for CS data(1TFI), on the other hand CTFC value range is large in case of TrCH for DCCHs(2 TFI) + TrCHs for AMR(10TFI+9TFI+3TFI) + PS packet data(7 TFI or more). "Choice section" is introduced out side of the repetition of CTFC since the CTFC size of repeated CTFCs are the same.
- (5) Editorial modification is made in the Gain factor information regarding reference TFC. Also clearly defined that gain factor information is only applicable for UL physical CH.
- (6) Modification is made to allow addition and removal of TFC for DCH and DSCH.
- (7) Editorial modification is made on the description of TFC for DSCH.
- (8) Addition to "Complete reconfiguration", "Addition" and "Removal", "Replace" concept is introduced in explicit TFCS configuration.

(9) Power offset Pp-m and gain factor information are grouped and new IE group name "Power offset information" is proposed.

(10) Editorial correction on reference column and section is made.

Clauses affected: 10.3.5.9, 10.3.5.17

Other specs

Affected:

Other 3G core specifications

→ List of CRs:

Other GSM core

→ List of CRs:

specifications

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.](#)

10.3.5.9 Gain Factor Power Offset Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Gain Factors</i>	MP			
>Signalled Gain Factors				The values for gain factors β_c and β_d are signalled directly for a TFC.
>>Gain Factor β_c	MP		Integer (0.. 15)	For UL DPCCH or control part of PRACH
>>Gain Factor β_d	MP		Integer (0..15)	For UL DPCCH+DPDCH or data part of PRACH
>>Reference TFC <u>numberID</u>	OP		Integer (0..453)	If this TFC is a reference TFC, indicates the reference <u>numberID</u> .
>Computed Gain Factors				The gain factors β_c and β_d are computed for a TFC, based on the signalled settings for the associated reference TFC.
>>Reference TFC <u>numberID</u>	MP		Integer (0.. 453)	Indicates the reference TFC <u>Id of the TFC</u> to be used to calculate the gain factors for this TFC. <u>In case of using computed gain factors, at least one signalled gain factor is necessary for reference.</u>
<u>Power offset P_{p-m}</u>	<u>OP</u>		<u>Integer(-5..10)</u>	<u>In dB. Power offset between the last transmitted preamble and the control part of the message (added to the preamble power to receive the power of the message control part)</u> <u>Needed only for PRACH</u>

<u>CHOICE Gain Factors</u>	<u>Condition under which the way to signal the Gain Factors is chosen</u>
<u>Signalled Gain Factors</u>	<u>The values for gain factors β_c and β_d are signalled directly for a TFC.</u>
<u>Computed Gain Factors</u>	<u>The gain factors β_c and β_d are computed for a TFC, based on the signalled settings for the associated reference TFC.</u>

10.3.5.17 Transport Format Combination Set

Indicates the allowed combinations of already defined Transport formats and the mapping between these allowed TFCs and the corresponding TFCI values.

For FDD, Where the UE is assigned access to one or more DSCH transport channels, a TFCI(field2) is used to signal the transport format combination for the DSCH, then the UTRAN has the choice of The following two cases/methods for signalling the mapping between TFCI(field 2) values and the corresponding TFCexists:

Case 1: Using one TFCI-word on the physical layer. A logical split determines the available number of transport format combinations for DCH and DSCH.

Case 2: Using split TFCI on the physical layer. Two TFCI-words, each having a static length of five bits, are used.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>IE type and reference</u>	<u>Semantics description</u>
<u>CHOICE TFCI signalling</u>	<u>MP</u>			'Normal' : meaning no split in the TFCI field (either 'Logical' or 'Hard') 'Split' : meaning there is a split in the TFCI field (either 'Logical' or 'Hard'). This value is only valid for FDD downlink when using DSCH.
> <u>Normal</u>				
>> <u>TFCI Field 1 Information</u>	<u>MP</u>		<u>Explicit TFCS Configuration</u> n <u>40.2.5.X10.3</u> <u>.5.x</u>	
> <u>Split</u>				
>> <u>Split type</u>	<u>OP</u>		<u>Enumerated ('Hard', 'Logical')</u>	'Hard' : meaning that TFCI (field 1) and TFCI (field 2) are each 5 bits long and each field is block coded separately. 'Logical' : meaning that on the physical layer TFCI (field 1) and TFCI (field 2) are concatenated, field 1 taking the most significant bits and field 2 taking the least significant bits). The whole is then encoded with a single block code.
>> <u>Length of TFCI(field2)</u>	<u>OP</u>		<u>Integer (1..10)</u>	This IE indicates the length measured in number of bits of TFCI(field2)
>> <u>TFCI Field 1 Information</u>	<u>OP</u>		<u>Explicit TFCS Configuration</u> n <u>40.2.5.X10.3</u> <u>.5.x</u>	
>> <u>TFCI Field 2 Information</u>	<u>OP</u>		<u>TFCI field 2 information</u> <u>40.2.5.X10.3</u> <u>.5.x</u>	

<u>CHOICE TFCI signalling</u>	<u>Condition under which TFCI signalling type is chosen</u>
<u>Normal</u>	It is chosen when no split in the TFCI field.
<u>Split</u>	It is chosen when split in the TFCI field. This value is only valid for FDD downlink when using DSCH.

10.23.5.X Explicit TFCS Configuration

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE TFCS representation	MP			
>Complete reconfiguration				
>>TFCS complete reconfiguration information	MP		TFCS Recofiguration/Addition information 10.2.5.X10.3.5.x	
>Addition				
>> TFCS addition information	MP		TFCS Recofiguration/Addition information 10.2.5.X10.3.5.x	
>Removal				
>> TFCS removal information	MP		TFCS Removal Information 10.2.5.X10.3.5.x	
>Replace				
>> TFCS removal information	MP		TFCS Removal Information 10.2.5.X10.3.5.x	
>> TFCS addition information	MP		TFCS Recofiguration/Addition information 10.2.5.X10.3.5.x	

10.23.5.X TFCI Field 2 Information

UTRAN has the choice of two methods for signalling the mapping between TFCI (field 2) values and the corresponding TFC:

Method #1 - TFCI range

The mapping is described in terms of a number of groups, each group corresponding to a given transport format combination (value of CTFC([field2](#))-[DSCH](#)). The CTFC([field2](#))-[DSCH](#) value specified in the first group applies for all values of TFCI([field 2](#)) between 0+ and the specified 'Max TFCI([field2](#)) value'. The CTFC([field2](#))-[DSCH](#) value specified in the second group applies for all values of TFCI([field 2](#)) between the 'Max TFCI([field2](#)) value' specified in the last group plus one and the specified 'Max TFCI([field2](#)) value' in the second group. The process continues in the same way for the following groups with the TFCI([field 2](#)) value used by the UE in constructing its mapping table starting at the largest value reached in the previous group plus one. [A range of TFCI values on the transport channel level can be configured to correspond to a range of codes in PDSCH mapping table.](#)

Method #2 - Explicit

The mapping between TFCI([field 2](#)) value and CTFC([field2](#))-[DSCH](#) is spelt out explicitly for each value of TFCI ([field2](#)).

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE Signalling method	MP			
> TFCI range				
>> TFCI(field 2) range	MP	1 to < MaxNoTF		

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>IE type and reference</u>	<u>Semantics description</u>
		<u>CIGroups></u>		
<u>>>>Max TFCI(field2) value</u>	<u>MP</u>		<u>Integer(1..1023)</u>	<u>This is the Maximum value in the range of TFCI(field2) values for which the specified CTFC(field2) applies</u>
<u>>>>TFCS Information for DSCH (TFCI range method)</u>	<u>MP</u>		<u>TFCS Information for DSCH (TFCI range method)</u> <u>10.2.5.X10.3</u> <u>.5.x</u>	
<u>> Explicit</u>				
<u>>>Explicit TFCS configuration</u>	<u>MP</u>		<u>Explicit TFCS configuration</u> <u>10.2.5.X10.3</u> <u>.5.x</u>	

<u>CHOICE Signalling method</u>	<u>Condition under which Split type is chosen</u>
<u>TFCI range</u>	
<u>Explicit</u>	

<u>Range Bound</u>	<u>Explanation</u>
<u>MaxNoTFCIGroups</u>	<u>Maximum number of groups, each group described in terms of a range of TFCI(field 2) values for which a single value of CTFC_DSCH applies</u>

10.23.5.X TFCS Reconfiguration/Addition Information

When it is used in TFCI field 1, the calculation of CTFC ignores any DSCH transport channels which may be assigned. When it is used in TFCI field 2, the calculation of CTFC ignores any DCH transport channels. The CTFC size should be chosen based on the maximum CTFC size for the UE. The first instance of the parameter "CTFC information" corresponds to Transport format combination 0, the second to transport format combination 1 and so on when it is used besides the case of TFCS *Addition*. Integer number of CTFC calculated according to clause 14.

In case of TFCS *Addition*, the integer number(s) is the CTFC that is added. The new additional TFC(s) is inserted into the first available position(s) in the TFCI. CTFC size should be same as the size used in *Complete reconfiguration*.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>IE type and reference</u>	<u>Semantics description</u>
<u>CHOICE CTFC Size</u>	<u>MP</u>			At least one, criticality: reject, spare value needed for future extension
<u>>2 bit CTFC</u>				
<u>>>CTFC information</u>	<u>MP</u>	1 to <u>MaxTFCCo</u> <u>unt</u>		
<u>>>>2bit CTFC</u>	<u>MP</u>		<u>Integer(0..3)</u>	
<u>>>>Power offset Information</u>	<u>OP</u>		<u>10.3.5.x</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>>>Gain Factor Information</u>	<u>OP</u>		<u>10.2.5.X</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>4 bit CTFC</u>				
<u>>>CTFC information</u>	<u>MP</u>	1 to <u>MaxTFCCo</u> <u>unt</u>		
<u>>>>4bit CTFC</u>	<u>MP</u>		<u>Integer(0..15)</u>	
<u>>>>Power offset Information</u>	<u>OP</u>		<u>10.3.5.x</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>>>Gain Factor Information</u>	<u>OP</u>		<u>10.2.5.X</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>6 bit CTFC</u>				
<u>>>CTFC information</u>	<u>MP</u>	1 to <u>MaxTFCCo</u> <u>unt</u>		
<u>>>>6 bit CTFC</u>	<u>MP</u>		<u>Integer(0..63)</u>	
<u>>>>Power offset Information</u>	<u>OP</u>		<u>10.3.5.x</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>>>Gain Factor Information</u>	<u>OP</u>		<u>10.2.5.X</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>8 bit CTFC</u>				
<u>>>CTFC information</u>	<u>MP</u>	1 to <u>MaxTFCCo</u> <u>unt</u>		
<u>>>>8 bit CTFC</u>	<u>MP</u>		<u>Integer(0..255)</u>	
<u>>>>Power offset Information</u>	<u>OP</u>		<u>10.3.5.x</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>>>Gain Factor Information</u>	<u>OP</u>		<u>10.2.5.X</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>12 bit CTFC</u>				
<u>>>CTFC information</u>	<u>MP</u>	1 to <u>MaxTFCCo</u> <u>unt</u>		
<u>>>>12 bit CTFC</u>	<u>MP</u>		<u>Integer(0..4095)</u>	
<u>>>>Power offset Information</u>	<u>OP</u>		<u>10.3.5.x</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>>>Gain Factor Information</u>	<u>OP</u>		<u>10.2.5.X</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>16 bit CTFC</u>				
<u>>>CTFC information</u>	<u>MP</u>	1 to <u>MaxTFCCo</u> <u>unt</u>		
<u>>>>16 bit CTFC</u>	<u>MP</u>		<u>Integer(0..65535)</u>	
<u>>>>Power offset Information</u>	<u>OP</u>		<u>10.3.5.x</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>>>Gain Factor Information</u>	<u>OP</u>		<u>10.2.5.X</u>	Needed only for uplink DPCCH/DPDCH or PRACH.
<u>>24 bit CTFC</u>				
<u>>>CTFC information</u>	<u>MP</u>	1 to <u>MaxTFCCo</u>		

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>IE type and reference</u>	<u>Semantics description</u>
>>>24 bit CTFC	MP	unt	Integer(0..16777215)	
>>>Power offset Information	OP		10.3.5.x	Needed only for uplink DPCCH/DPDCH or PRACH.
>>>Gain Factor Information	OP		10.2.5.X	Needed only for uplink DPCCH/DPDCH or PRACH.
>>>>Power offset P _{p-m}	MP		Real (-5..10 by step of 1)	In dB. Power offset between the last transmitted preamble and the control part of the message (added to the preamble power to receive the power of the message control part.)

<u>Range Bound</u>	<u>Explanation</u>
<u>MaxTFCCcount</u>	Maximum number of Transport Format Combinations to setup or add.

10.23.5.X TFCS Information for DSCH (TFCI range method)

The CTFC size should be chosen based on the maximum CTFC size for the UE. Integer number calculated according to clause 14. The calculation of CTFC ignores any DCH transport channels which may be assigned.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>IE type and reference</u>	<u>Semantics description</u>
CHOICE CTFC Size	MP			At least one, criticality: reject, spare value needed for future extension
>2 bit CTFC				
>>2bit CTFC	MP		Integer(0..3)	
>4 bit CTFC				
>>4bit CTFC	MP		Integer(0..15)	
>6 bit CTFC				
>>6 bit CTFC	MP		Integer(0..63)	
>8 bit CTFC				
>>8 bit CTFC	MP		Integer(0..255)	
>12 bit CTFC				
>>12 bit CTFC	MP		Integer(0..10234095)	
>16 bit CTFC				
>>16 bit CTFC	MP		Integer(0..65535)	
>24 bit CTFC				
>>24 bit CTFC	MP		Integer(0..16777215)	

10.23.5.X TFCS Removal Information

The integer number(s) is a reference to the transport format combinations to be removed.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>IE type and reference</u>	<u>Semantics description</u>
<u>Removal TFCI information</u>	<u>MP</u>	<u>1 to MaxDelTF Ccount</u>		
<u>>TFCI</u>	<u>MP</u>		<u>Integer(0..1023)</u>	

<u>Range Bound</u>	<u>Explanation</u>
<u>MaxDelTFCcount</u>	<u>Maximum number of Transport Format Combinations to be removed.</u>

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE_DSCH	MP			
>FDD without access to DSCH assigned or TDD				This choice is made if the UE is not assigned any DSCH transport channels
>>CHOICE_TFCS representation	MP			
>>>Complete reconfiguration		1 to MaxTFCCcount		
>>>>CTFC	MP		Integer(0..MaxCTFC)	The first instance of the parameter <i>Transport format combination</i> corresponds to Transport format combination 0, the second to transport format combination 1 and so on. Integer number calculated according to clause 14.
>>>>Gain Factor Information	MP			
>>>>Power offset P _{p-m}	MP		Real (-5..10 by step of 1)	In dB. Power offset between the last transmitted preamble and the control part of the message (added to the preamble power to receive the power of the message control part)
>>>>Removal		1 to MaxDelTFCount		
>>>>TFCl	MP		Integer(0..MaxTFClVal ue)	Removal of TFCl. The integer number(s) is a reference to the transport format combinations to be removed.
>>>>Addition		1 to MaxAddTFCount		
>>>>AddCTFC	MP		Integer(0..MaxCTFC)	Addition of TFCl. The integer number(s) is the calculated transport format combination that is added. The new TFC(s) is inserted into the first available position(s) in the TFCl (counting from zero).
>>>>Gain Factor Information	MP			
>>>>Power offset P _{p-m}	MP		Real (-5..10 by step of 1)	In dB. Power offset between the last transmitted preamble and the control part of the message (added to the preamble power to receive the power of the message control part)
>FDD with access to DSCH assigned				This choice is made if the UE is assigned one or more DSCH transport channels
>>Length of TFCl2	MP		Integer (1..9)	This IE indicates the length measured in number of bits of TFCl(field2)
>>Transport format combination_DCH	MP	1 to <MaxTFCl-1>Combs		The first instance of the parameter <i>Transport format combination_DCH</i> corresponds to TFCl (field 1) = 1, the second to TFCl (field 1) = 2 and so on.
>>>CTFC_DCH	MP		Integer(0..MaxCTFC_DCH)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DSCH transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				which may be assigned
>>Choice Signalling method	MP			
>>>TFCI range				
>>>>TFC mapping on DSCH	MP	1 to <MaxNoTFCIGroups>		
>>>>>Max_TFCI(field2) value	MP		Integer(1..512)	This is the Maximum value in the range of TFCI(field2) values for which the specified CTFC_DSCH applies
>>>>>>CTFC_DSCH	MP		Integer(0..MaxCTFC_DSCH)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DCH transport channels which may be assigned
>>>Explicit				
>>>>Transport format combination_DSCH	MP	1 to <MaxTFCI_2_Combs>		The first instance of the parameter <i>Transport format combination_DSCH</i> corresponds to TFCI (field2) = 1, the second to TFCI (field 2) = 2 and so on.
>>>>>CTFC_DSCH	MP		Integer(0..MaxCTFC_DSCH)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DCH transport channels which may be assigned

Multi-Bound	Explanation
<i>MaxCTFC</i>	Maximum value number of the CTFC value is calculated according to the following: $\sum_{i=1}^I (L_i - 1) P_i$ with the notation according to clause 14.
<i>MaxTFCCount</i>	Maximum number of Transport Format Combinations.
<i>MaxTFCValue</i>	The max value of the Transport Format Combinations that currently is defined for this UE.
<i>MaxAddTFCcount</i>	Maximum number of Transport Format Combinations to be added.
<i>MaxDelTFCcount</i>	Maximum number of Transport Format Combinations to be removed.
<i>MaxTFCI_1_Combs</i>	Maximum number of TFCI (field 1) combinations (given by 2 raised to the power of the length of the TFCI (field 1))
<i>MaxTFCI_2_Combs</i>	Maximum number of TFCI (field 2) combinations (given by 2 raised to the power of the length of the TFCI (field 2))
<i>MaxNoTFCIGroups</i>	Maximum number of groups, each group described in terms of a range of TFCI(field 2) values for which a single value of CTFC_DSCH applies
<i>MaxCTFC_DCH</i>	Maximum value of CTFC_DCH is calculated according to the following: $\sum_{i=1}^I (L_i - 1) P_i$ with the notation according to clause 14 where only the DCH transport channels are taken into account in the calculation.
<i>MaxCTFC_DSCH</i>	Maximum value of CTFC_DSCH is calculated according to the following: $\sum_{i=1}^I (L_i - 1) P_i$

Multi Bound	Explanation
	with the notation according to clause 14 where only the DSCH transport channels are taken into account in the calculation.

11.3.5 Transport channel information elements

TransportChannel-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

```

maxAddTFC-Count,
maxCPCHsetcount,
maxCTFC,
maxCTFC-DCH,
maxCTFC-DSCH,
maxDelTFC-Count,
maxDelTrCHcount,
maxDL-CCTrCHcount,
maxDRAC-Classes,
maxDRACReconAddTrCHcount,
maxFACHcount,
maxNoTFCI-Groups,
maxReconAddTrCHcount,
maxRM,
maxRstTrCH-Count,
maxTF-Count,
maxTF-Value,
maxTFC-Count,
maxTFC-Value,
maxTFC-Value-1,
maxTFCI-1-Combs,
maxTFCI-2-Combs,
maxTFCI-Value,
maxTFcount,
maxTrCH,
maxTrChCount,
maxTrChValue,
maxUL-CCTrCHcount

```

FROM Constant-definitions;

```

AddCTFC-List ::= SEQUENCE (SIZE (1..maxAddTFC-Count)) OF
                  CTFC

```

```


Addition ::= SEQUENCE {
  ctfc CTFC,
  gainFactorInformation GainFactorInformation,
  powerOffsetPp-m PowerOffsetPp-m
}


```

```


AdditionList ::= SEQUENCE (SIZE (1..maxAddTFC-Count)) OF
                  Addition


```

```

AllowedTFI-List ::= SEQUENCE (SIZE (1..maxTF-Count)) OF
                    INTEGER (0..maxTF-Value)

```

```

AllowedTFC-List ::= SEQUENCE (SIZE (1..maxTFC-Count)) OF
                    TFC-Value

```

```

BitModeRLC-SizeInfo ::= CHOICE {
  sizeType1 INTEGER (1..127),
  sizeType2 SEQUENCE {
    part1 INTEGER (0..15),
    part2 INTEGER (1..7) OPTIONAL
    -- Actual size = (part1 * 8) + 128 + part2
  },
  sizeType3 SEQUENCE {
    part1 INTEGER (0..47),
    part2 INTEGER (1..15) OPTIONAL
    -- Actual size = (part1 * 16) + 256 + part2
  },
  sizeType4 SEQUENCE {
    part1 INTEGER (0..62),

```

```

        part2                                INTEGER (1..63)                                OPTIONAL
        -- Actual size = (part1 * 64) + 1024 + part2
    }
}

BLER-QualityValue ::=                       INTEGER (0..63)

ChannelCodingType ::=                       CHOICE {
    noCoding                                NULL,
    convolutional                           CodingRate,
    turbo                                   NULL
}

CodingRate ::=                              ENUMERATED {
    half,
    third }

CommonDynamicTF-Info ::=                   SEQUENCE {
    numberOfTransportBlocks                 NumberOfTransportBlocks,
    modeSpecificInfo                       CHOICE {
        fdd                                SEQUENCE {
            octetModeRLC-SizeInfoType2     OctetModeRLC-SizeInfoType2
        },
        tdd                                SEQUENCE {
            commonTDD-Choice                CHOICE {
                bitModeRLC-SizeInfo         BitModeRLC-SizeInfo,
                octetModeRLC-SizeInfoType1  OctetModeRLC-SizeInfoType1
            }
        }
    }
}
OPTIONAL

CommonDynamicTF-InfoList ::=               SEQUENCE (SIZE (1..maxTFcount)) OF
    CommonDynamicTF-Info

CommonTransChTFS ::=                      SEQUENCE {
    dynamicTF-InformationList              CommonDynamicTF-InfoList,
    semistaticTF-Information               SemistaticTF-Information
}

CompleteReconf ::=                      SEQUENCE {
    ctfc                               CTFC,
    gainFactorInformation                GainFactorInformation,
    powerOffsetPp m                       PowerOffsetPp m
}

CompleteReconfList ::=                   SEQUENCE (SIZE (1..maxCTFC-Count)) OF
    CompleteReconf

ComputedGainFactors ::=                   SEQUENCE {
    referenceTFC-NumberreferenceTFC-ID           ReferenceTFC-NumberReferenceTFC-ID
}

ControlledTrChList ::=                   SEQUENCE (SIZE (1..maxTrChCount)) OF
    TransportChannelIdentity

CPCH-SetID ::=                           INTEGER (1..maxCPCHsetcount)

CRC-Size ::=                              ENUMERATED {
    crc0, crc8, crc12, crc16, crc24 }

CTFC-DCH ::=                           INTEGER (0..maxCTFC-DCH)

CTFC-DSCH ::=                           INTEGER (0..maxCTFC-DSCH)

CTFC ::=                                  INTEGER (0..maxCTFC)

DedicatedDynamicTF-Info ::=               SEQUENCE {
    numberOfTransportBlocks                 NumberOfTransportBlocks,
    rlcMode                                CHOICE {
        bitMode                             BitModeRLC-SizeInfo,
        octetModeType1                       OctetModeRLC-SizeInfoType1
    }
}
OPTIONAL

DedicatedDynamicTF-InfoList ::=           SEQUENCE (SIZE (1..maxTFcount)) OF
    DedicatedDynamicTF-Info

```

```

DedicatedTransChTFS ::= SEQUENCE {
    dynamicTF-InformationList
    semistaticTF-Information
}

DeletedUL-TransChInformation ::= SEQUENCE {
    transportChannelIdentity
}

DL-AddReconfTransChInfo2List ::= SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF
    DL-AddReconfTransChInformation2

DL-AddReconfTransChInfoList ::= SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF
    DL-AddReconfTransChInformation

DL-AddReconfTransChInformation ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    transportFormatSet TransportFormatSet,
    modeSpecificInfo CHOICE {
        fdd NULL,
        tdd SEQUENCE {
            dl-DCH-TFCS-Identity TFCS-Identity OPTIONAL
        }
    } OPTIONAL,
    dch-QualityTarget QualityTarget OPTIONAL,
    tm-SignallingInfo TM-SignallingInfo OPTIONAL
}

DL-AddReconfTransChInformation2 ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    transportFormatSet TransportFormatSet,
    qualityTarget QualityTarget
}

DL-CommonTransChInfo ::= SEQUENCE {
    sccpch-TFCS TFCS OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd SEQUENCE {
            dl-DCH-TFCS TFCS OPTIONAL
        },
        tdd SEQUENCE {
            individualDL-CCTrCH-InfoList IndividualDL-CCTrCH-InfoList OPTIONAL
        }
    }
}

DL-DeletedTransChInfoList ::= SEQUENCE (SIZE (1..maxDelTrCHcount)) OF
    DL-DeletedTransChInformation

DL-DeletedTransChInformation ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    modeSpecificInfo CHOICE {
        fdd NULL,
        tdd SEQUENCE {
            dl-DCH-TFCS-Identity TFCS-Identity OPTIONAL
        }
    } OPTIONAL
}

DL-PreDefTrChInfoList ::= SEQUENCE (SIZE (1..maxTrCH)) OF
    DL-PreDefTrChInformation

DL-PreDefTrChInformation ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    transportFormatSet TransportFormatSet,
    qualityTarget QualityTarget OPTIONAL,
    tm-SignallingInfo TM-SignallingInfo OPTIONAL
}

DRAC-ClassIdentity ::= INTEGER (1..maxDRAC-Classes)

DRAC-StaticInformation ::= SEQUENCE {
    transmissionTimeValidity TransmissionTimeValidity,
    timeDurationBeforeRetry TimeDurationBeforeRetry,
    drac-ClassIdentity DRAC-ClassIdentity
}

```



```

DRAC-StaticInformationList ::= SEQUENCE (SIZE (1..maxDRACReconAddTrCHcount)) OF
                                DRAC-StaticInformation

FACH-PCH-Information ::= SEQUENCE {
    transportFormatSet      TransportFormatSet,
    ctch-Indicator          BOOLEAN
}

Field2TFCI-Range ::= SEQUENCE {
    maxTFCIField2Value      INTEGER(1..1023),
    tfcsInfoForDSCH        TFCSInfoForDSCH
}

Field2TFCI-RangeList ::= SEQUENCE (SIZE(1..maxNoOfTFCI-Groups)) OF
Field2RangeTFCI-Range

ExplicitTFCSConfig ::= CHOICE{
    complete                TFCSReconfAddList,
    addition                TFCSReconfAddList,
    removal                 RemovalList,
    replace                 SEQUENCE{
        tfcsRemoval        RemovalList,
        tfcsAdd            TFCSReconfAddList
    }
}

FACH-PCH-InformationList ::= SEQUENCE (SIZE (1..maxFACHcount)) OF
                                FACH-PCH-Information

GainFactor ::= INTEGER (0..15)

GainFactorInformation ::= CHOICE {
    signalledGainFactors    SignalledGainFactors,
    computedGainFactors     ComputedGainFactors
}

IndividualDL-CCTrCH-Info ::= SEQUENCE {
    dl-DCH-TFCS-Identity    TFCS-Identity,
    dl-DCH-TFCS            TFCS
}

IndividualUL-CCTrCH-InfoList ::= SEQUENCE (SIZE (1..maxUL-CCTrCHcount)) OF
                                IndividualUL-CCTrCH-Info

IndividualUL-CCTrCH-Info ::= SEQUENCE {
    ul-DCH-TFCS-Identity    TFCS-Identity,
    ul-DCH-TFCS            TFCS
}

IndividualDL-CCTrCH-InfoList ::= SEQUENCE (SIZE (1..maxDL-CCTrCHcount)) OF
                                IndividualDL-CCTrCH-Info

-- **TODO**, extensibility?
MessType ::= ENUMERATED {
    transportFormatCombinationControl }

Non-allowedTFC-List ::= SEQUENCE (SIZE (1..maxTFC-Count)) OF
                                INTEGER (0..maxTFC-Value)

NumberOfTransportBlocks ::= INTEGER (0..4095)

OctetModeRLC-SizeInfoType1 ::= CHOICE {
    sizeType1              INTEGER (0..31),
    -- Actual size = (8 * sizeType1) + 16
    sizeType2              SEQUENCE {
        part1              INTEGER (0..23),
        part2              INTEGER (1..3)
        -- Actual size = (32 * part1) + 272 + (part2 * 8)
    },
    sizeType3              SEQUENCE {
        part1              INTEGER (0..61),
        part2              INTEGER (1..7)
        -- Actual size = (64 * part1) + 1040 + (part2 * 8)
    }
}

OctetModeRLC-SizeInfoType2 ::= SEQUENCE {
    sizeType1              INTEGER (0..31),

```

```

-- Actual size = (sizeType1 * 8) + 48
sizeType2          INTEGER (0..63),
-- Actual size = (sizeType2 * 16) + 312
sizeType3          INTEGER (0..56)
-- Actual size = (sizeType3 *64) + 1384

```

```

}

```

```

PowerOffsetInformation ::= SEQUENCE {
    gainFactorInformation CHOICE {
        signalledGainFactors SignalledGainFactors,
        computedGainFactors  ComputedGainFactors
    },
    powerOffsetPp-m PowerOffsetPp-m OPTIONAL
}

```

```

PowerOffsetPp-m ::= INTEGER (-5..10)

```

```

PreDefTransChConfiguration ::= SEQUENCE {
    ul-TFCS          TFCS          OPTIONAL,
    ul-AddReconfTrChInfoList UL-PreDefTrChInfoList OPTIONAL,
    dl-TFCS          TFCS          OPTIONAL,
    dl-TrChInfoList DL-PreDefTrChInfoList OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd          NULL,
        tdd          SEQUENCE {
            ul-DCH-TFCS-Identity TFCS-Identity,
            dl-DCH-TFCS-Identity TFCS-Identity
        }
    }
    -- TABULAR: The two separate choices in tabular have been
    -- combined here.
}

```

```

QualityTarget ::= SEQUENCE {
    bler-QualityValue BLER-QualityValue
}

```

```

RateMatchingAttribute ::= INTEGER (1..maxRM)

```

```

ReferenceTFC-Number ReferenceTFC-ID ::= INTEGER (0..315)

```

```

Removal ::= SEQUENCE {
    tfci TFci
}

```

```

RemovalList ::= SEQUENCE (SIZE (1..maxDelTFC-Count)) OF Removal

```

```

RestrictedTrChIdentity ::= INTEGER (0..maxTrChValue)

```

```

RestrictedTrChInfo ::= SEQUENCE {
    restrictedTrChIdentity RestrictedTrChIdentity,
    allowedTFI-List AllowedTFI-List OPTIONAL
}

```

```

RestrictedTrChInfoList ::= SEQUENCE (SIZE (1..maxRstTrCH-Count)) OF RestrictedTrChInfo

```

```

SemistaticTF-Information ::= SEQUENCE {
    transmissionTimeInterval TransmissionTimeInterval,
    channelCodingType ChannelCodingType,
    rateMatchingAttribute RateMatchingAttribute,
    crc-Size CRC-Size
}

```

```

SignalledGainFactors ::= SEQUENCE {
    gainFactorBetaC GainFactor,
    gainFactorBetaD GainFactor,
    referenceTFC-NumberreferenceTFC-ID ReferenceTFC-NumberReferenceTFC-ID
    OPTIONAL
}

```

```

SplitTFCI ::= SEQUENCE {
    splitType ENUMERATED {hard, logical} OPTIONAL,
    tFCIField2Length INTEGER (0..10) OPTIONAL,
    tFCIField1 ExplicitTFCSConfig OPTIONAL,
    tFCIField2 TFCIField2 OPTIONAL
}

```

TFC-DCH-List ::= SEQUENCE (SIZE (1..maxTFCI-1-Combs)) OF
CTFC-DCH

TFC-DSCH-List ::= SEQUENCE (SIZE (1..maxTFCI-2-Combs)) OF
CTFC-DSCH

TFC-MappingOnDSCH ::= SEQUENCE {
maxTFCI-Field2Value INTEGER (1..512),
ctfc-DSCH CTFC-DSCH
}

TFC-MappingOnDSCH-List ::= SEQUENCE (SIZE (1..maxNoTFCI-Groups)) OF
TFC-MappingOnDSCH

TFC-Subset ::= CHOICE {
minimumAllowedTFC-Number TFC-Value,
allowedTFC-List AllowedTFC-List,
non-allowedTFC-List Non-allowedTFC-List,
restrictedTrChInfoList RestrictedTrChInfoList
}

TFC-Value ::= INTEGER (0..maxTFC-Value-1)

TFCI ::= INTEGER (0..maxTFCI-Value)

TFCI2-Length ::= INTEGER (1..9)

TFCIField2 ::= CHOICE {
tfcIRange Field2TFCI-RangeList,
explicit ExplicitTFCSConfig
}

TFCS ::= CHOICE {
normal ExplicitTFCSConfig,
split SplitTFCI
fddWithoutAccessOrTDD SEQUENCE {
tfcsRepresentation CHOICE {
completeReconfList CompleteReconfList,
removalList RemovalList,
additionList AdditionList
}
},
fddWithAccess SEQUENCE {
tfcI2-Length TFCI2-Length,
tfc-DCH-List TFC-DCH-List,
signalingMethod CHOICE {
tfcIRange SEQUENCE {
tfc-MappingOnDSCH-List TFC-MappingOnDSCH-List
},
explicit SEQUENCE {
tfc-DSCH-List TFC-DSCH-List
}
}
}

TFCS-Identity ::= SEQUENCE {
tfcs-ID INTEGER (1..8),
sharedChannelIndicator BOOLEAN
}

TFCSInfoForDSCH ::= CHOICE {
ctfc2Bit INTEGER (0..3),
ctfc4Bit INTEGER (0..15),
ctfc6Bit INTEGER (0..63),
ctfc8Bit INTEGER (0..255),
ctfc12Bit INTEGER (0..10234095),
ctfc16Bit INTEGER (0..65535),
ctfc24Bit INTEGER (0..16777215),
spare NULL
}

TFCSReconfAdd ::= SEQUENCE {
ctfcSize CHOICE {
ctfc2Bit INTEGER (0..3),
ctfc4Bit INTEGER (0..15),

```

        ctfc6Bit          INTEGER(0..63),
        ctfc8Bit          INTEGER(0..255),
        ctfc12Bit         INTEGER(0..1023),
        ctfc16Bit         INTEGER(0..65535),
        ctfc24Bit         SEQUENCE {
            ctfc24         INTEGER(0..16777215),
            powerOffsetPp-m PowerOffsetPp-m
        }
        spare              NULL
    }
    gainFactorInfomration GainFactorInformation OPTIONAL
}

TFCsReconfAdd ::= SEQUENCE {
    ctfcSize          CHOICE {
        ctfc2Bit      SEQUENCE (SIZE(1.. maxTFC-Count)) OF SEQUENCE {
            ctfc2      INTEGER(0..3),
            gainFactorInformation PowerOffsetInformation OPTIONAL
        },
        ctfc4Bit      SEQUENCE (SIZE(1.. maxTFC-Count)) OF SEQUENCE {
            ctfc4      INTEGER(0..15),
            gainFactorInformation PowerOffsetInformation OPTIONAL
        },
        ctfc6Bit      SEQUENCE (SIZE(1.. maxTFC-Count)) OF SEQUENCE {
            ctfc6      INTEGER(0..63),
            gainFactorInformation PowerOffsetInformation OPTIONAL
        },
        ctfc8Bit      SEQUENCE (SIZE(1.. maxTFC-Count)) OF SEQUENCE {
            ctfc8      INTEGER(0..255),
            gainFactorInformation PowerOffsetInformation OPTIONAL
        },
        ctfc12Bit     SEQUENCE (SIZE(1.. maxTFC-Count)) OF SEQUENCE {
            ctfc12     INTEGER(0..4095),
            gainFactorInformation PowerOffsetInformation OPTIONAL
        },
        ctfc16Bit     SEQUENCE (SIZE(1.. maxTFC-Count)) OF SEQUENCE {
            ctfc16     INTEGER(0..65535),
            gainFactorInformation PowerOffsetInformation OPTIONAL
        },
        ctfc24Bit     SEQUENCE (SIZE(1.. maxTFC-Count)) OF SEQUENCE {
            ctfc24     INTEGER(0..16777215),
            gainFactorInformation PowerOffsetInformation OPTIONAL
        },
        spare          NULL
    }
}

TFCsReconfAddList ::= SEQUENCE (SIZE(1..maxTFC-Count)) OF TFCsReconfAdd

TimeDurationBeforeRetry ::= INTEGER (1..256)

TM-SignallingInfo ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    tm-SignallingMode        CHOICE {
        mode1                 SEQUENCE {
            messType          MessType
        },
        mode2                 SEQUENCE {
            controlledTrChList ControlledTrChList
        }
    }
}

TransmissionTimeInterval ::= ENUMERATED {
    tti10, tti20, tti40, tti80 }

TransmissionTimeValidity ::= INTEGER (1..256)

TransportChannelIdentity ::= INTEGER (1..64)

TransportFormatSet ::= CHOICE {
    dedicatedTransChTFS    DedicatedTransChTFS,
    commonTransChTFS       CommonTransChTFS
}

UL-AddReconfTransChInfoList ::= SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF
    UL-AddReconfTransChInformation

```

```

UL-AddReconfTransChInformation ::= SEQUENCE {
    transportChannelIdentity      TransportChannelIdentity,
    transportFormatSet            TransportFormatSet,
    modeSpecificInfo              CHOICE {
        fdd                       NULL,
        tdd                       SEQUENCE {
            ul-DCH-TFCS-Identity   TFCS-Identity           OPTIONAL
        }
    }
}
OPTIONAL

UL-CommonTransChInfo ::= SEQUENCE {
    tfc-Subset                    TFC-Subset           OPTIONAL,
    modeSpecificInfo              CHOICE {
        fdd                       SEQUENCE {
            ul-DCH-TFCS            TFCS
        },
        tdd                       SEQUENCE {
            ul-DCH-TFCS-Identity   TFCS-Identity
        }
    }
}
OPTIONAL

UL-DeletedTransChInfoList ::= SEQUENCE (SIZE (1..maxDelTrCHcount)) OF
    DeletedUL-TransChInformation

UL-DeletedTransChInformation ::= SEQUENCE {
    transportChannelIdentity      TransportChannelIdentity,
    modeSpecificInfo              CHOICE {
        fdd                       NULL,
        tdd                       SEQUENCE {
            individualUL-CCTrCH-InfoList IndividualUL-CCTrCH-InfoList
        }
    }
}
OPTIONAL

UL-PreDefTrChInfoList ::= SEQUENCE (SIZE (1..maxTrCH)) OF
    UL-PreDefTrChInformation

UL-PreDefTrChInformation ::= SEQUENCE {
    transportChannelIdentity      TransportChannelIdentity,
    transportFormatSet            TransportFormatSet
}

END

```

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 300r1

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG-RAN #8** for approval
 list expected approval meeting # here ↑ for information

strategic (for SMG use only)
 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 UTRAN / Radio Core Network
 (at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 2000-4-10

Subject: Usage of U-RNTI and C-RNTI in DL DCCH message

Work item:

Category: F Correction **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
 Release 00
 (only one category shall be marked with an X)

Reason for change: This CR clarifies how the U-RNTI and C-RNTI in the MAC header are selected for CELL UPDATE CONFIRM message. The C-RNTI can be re-used in the case that UTRAN knows that the UE is in the cell where the old C-RNTI is allocated (e.g. cell update cause = periodical). In this case, there is no need to reallocate new C-RNTI to the UE. Therefore, DCCH with old C-RNTI in the MAC header can be used. (Or DCCH with U-RNTI in the MAC header also can be used). The UE shall be able to receive either U-RNTI or C-RNTI in the MAC header by checking "UE ID type". Therefore, the UE does not have to delete C-RNTI before receiving CELL UPDATE CONFIRM message in case of not re-selecting a new cell. If new C-RNTI is allocated, UE shall delete old C-RNTI.

Clauses affected: 8.3.1

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:



help.doc

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

8.3 RRC connection mobility procedures

8.3.1 Cell update

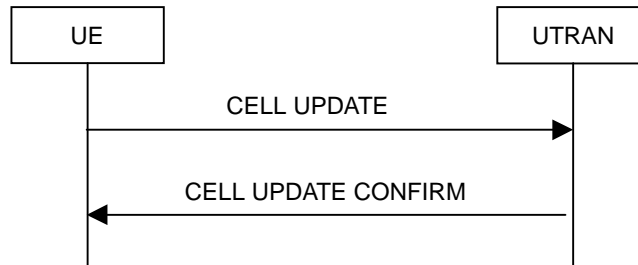


Figure 33: Cell update procedure, basic flow

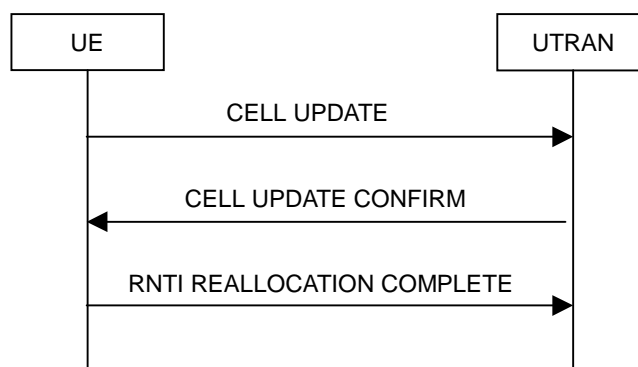


Figure 34: Cell update procedure with RNTI reallocation

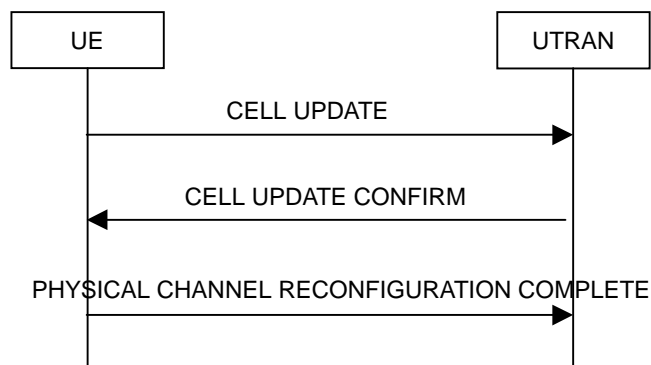


Figure 35: Cell update procedure with physical channel reconfiguration

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. It may also be used for supervision of the RRC connection, even if no cell reselection takes place. The cell update procedure can also be used to re-configure 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 in an AM RLC entity for the signalling link (see note).

NOTE: PHYSICAL 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 may apply the cell update procedure for a number of purposes. The specific requirements the UE shall take into account for each case are specified in the following:

- Upon initiation of the procedure, the UE shall set the variable `PROTOCOL_ERROR_INDICATOR` to `FALSE`.
- In CELL_FACH or CELL_PCH state, the UE shall perform the cell update procedure when selecting another cell (cell reselection).
- In CELL_FACH and CELL_PCH state, the UE shall perform the cell update procedure upon expiry of T305 while the UE is in the service area. The UE shall only perform this periodic cell updating if configured by means of the IE "Information for periodical cell and URA update" in System Information Block Type 2. The UE shall initially start timer T305 upon entering CELL_FACH or CELL_PCH state.
- In CELL_PCH state and URA_PCH state, the UE shall initiate the cell update procedure if it wants to transmit UL data.
- In CELL_PCH and URA_PCH state, the UE shall perform the cell update procedure when receiving a PAGING TYPE 1 message as in subclause 8.1.2.3.
- moving to CELL_FACH state, if not already in that state.
- consider stored C-RNTI to be invalid until CELL UPDATE CONFIRM message is received when UE detects a new cell.
- ~~delete any C-RNTI and~~ suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.
- sending a CELL UPDATE message on the uplink CCCH.
- starting timer T302 and resetting counter V302.

The IE "cell update cause" shall be used as follows:

- In case of cell reselection: "cell reselection";
- In case of periodic cell updating: "periodic cell update";
- In case of UL data transmission: "UL data transmission";
- In case of paging response: "paging response".

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`.

The IE "AM_RLC error indication" shall be set when the UE detects unrecoverable error in an AM RLC entity for the signalling link.

The UE shall include an intra-frequency measurement report in the CELL UPDATE message, 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.

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 that is specified in subclause 8.5.5, the UE shall

- start timer T307;
- search for cell to camp.

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 a 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 should transmit a CELL UPDATE CONFIRM message on the downlink DCCH.

When the UTRAN detects AM_RLC error, it waits for CELL UPDATE message from the UE and when the UTRAN receives it, UTRAN commands the UE to re-configure AM_RLC by sending CELL UPDATE CONFIRM message. This procedure can be used not only in the case of AM_RLC error but also in the case that UTRAN wants to re-configure 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.

8.3.1.5 Reception of the CELL UPDATE CONFIRM message by the UE

Upon receiving the CELL UPDATE CONFIRM message ([old C-RNTI or U-RNTI may be used for MAC header](#)), the UE shall stop timer T302.

[The UE shall delete old C-RNTI when a new C-RNTI is allocated. If not allocated, use old C-RNTI as a valid C-RNTI.](#)

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the CELL UPDATE CONFIRM message includes the IE "CN domain identity" and the IE "NAS system information", the UE shall forward the content of the IE "NAS system information" to the non-access stratum entity of the UE identified by the IE "CN domain identity".

If the CELL UPDATE CONFIRM message includes the IE "URA-Id" the UE shall store this URA identity.

If the CELL UPDATE CONFIRM message does not include IE "new C-RNTI", IE "new U-RNTI", IE "PRACH info" nor IE "Secondary CCPCH info", no RRC response message is sent to the UTRAN.

If the CELL UPDATE CONFIRM message includes the IE "new C-RNTI" and optionally the IE "new U-RNTI" but does not include IE "PRACH info" or IE "Secondary CCPCH info", the UE shall update its identities and transmit an RNTI REALLOCATION COMPLETE message on the uplink DCCH using the PRACH indicated in the broadcast system information.

If the CELL UPDATE CONFIRM message includes the IE "RLC re-configuration indicator (for C-plane)" the UE shall reconfigure the AM RLC entities on C-plane.

If the CELL UPDATE CONFIRM message includes the IE "RLC re-configuration indicator (for U-plane)" the UE shall reconfigure the AM RLC entities on U-plane.

If the CELL UPDATE CONFIRM message includes the IE "PRACH info" and/or the IE "Secondary CCPCH info", the UE shall

- Perform the actions stated in subclauses 8.5.7.6.2 and 8.5.7.6.3.
- update its identities if the CELL UPDATE CONFIRM message includes the IE new C-RNTI" and optionally the

IE "new U-RNTI".

- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using the PRACH indicated in CELL UPDATE CONFIRM message.

The UE shall enter a state according to subclause 8.5.8 applied on the CELL UPDATE CONFIRM message, unless specified otherwise below.

If the IE "Cell update cause" in CELL UPDATE message was set to "UL data transmission" or "paging response", the UE shall remain in CELL_FACH state.

If the IE "Cell update cause" in CELL UPDATE message was set to "periodic cell update" or "cell reselection", the UE shall return to the state it was in before initiating the cell update procedure.

In case none of the above conditions apply, the UE shall return to the state it was in before initiating the cell update procedure.

In case the UE ends in CELL_FACH or CELL_PCH state and periodic cell updating is configured, it shall reset timer T305.

In case the UE does not end in CELL_FACH state, it shall delete its C-RNTI.

If the UE remains in CELL_FACH state and the CELL UPDATE CONFIRM message includes the IE "New C-RNTI" the UE shall then resume data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

8.3.1.6 Invalid CELL UPDATE CONFIRM message

If the UE receives an CELL UPDATE CONFIRM 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:

The UE shall check the value of V302 and

- If V302 is smaller or equal than N302, the UE shall set the variable PROTOCOL_ERROR_INDICATOR to TRUE, retransmit a CELL UPDATE message on the uplink CCCH, restart timer T302 and increase counter V302. The IE "Cell update cause" shall be set to the event causing the transmission of the CELL UPDATE message, see subclause 8.3.1.2.
- If V302 is greater than N302, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated 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.

8.3.1.7 T302 expiry or cell reselection

- Upon expiry of timer T302; and/or
- upon reselection of another UTRA cell when waiting for the CELL UPDATE CONFIRM message,

the UE shall check the value of V302 and:

- If V302 is smaller or equal than N302, the UE shall retransmit a CELL UPDATE message on the uplink CCCH, restart timer T302 and increase counter V302. The IE "Cell update cause" shall be set to the event causing the transmission of the CELL UPDATE message, see subclause 8.3.1.2.
- If V302 is greater than N302, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated 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

8.3.1.8 Reception of the RNTI REALLOCATION COMPLETE message by the UTRAN

See subclause 8.3.3.4.

8.3.1.9 Reception of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message by the UTRAN

When the UTRAN receives PHYSICAL CHANNEL RECONFIGURATION message, the procedure ends.

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 301

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG-RAN #8** for approval
 list expected approval meeting # here ↑ for information

strategic (for SMG use only)
 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 UTRAN / Radio Core Network
 (at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 2000-4-10

Subject: Description of Cell Update Procedure

Work item:

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

Reason for change:

(1) Resonse message when UE receives CELL UPDATE CONFIRM
 In cell update procedure, UE may not receive PRACH and SCCPCH information in CELL UPDATE CONFIRM message. In this case, the UE has to retrieve those information from SYSMTEM INFORMATION if needed and has to reconfigure PRACH and SCCPCH.
 IE "PRACH systeminformation" and IE "SCCPCH system information" includes transport channel information and physical channel information. If both are reconfigured and the UE stays in CELL_FACH after cell update procedure, the UE should send TRANSPORT CHANNEL RECONFIGURATION message to let UTRAN know that the reconfiguration is completed.
 If only physical channel information is reconfigured and the UE stays in CELL_FACH after cell update procedure, the UE should send PHYSICAL CH RECONFIGURATION COMPLETE message.
 Same concept should be applied in case UE was in CELL_PCH or URA_PCH state before initiating cell update procedure.

 If the UE receives no PRACH information nor SCCPCH information in CELL UPDATE CONFIRM message but a new C-RNTI/U-RNTI is allocated and no update is initiated in the UE for PRACH and SCCPCH given in SYSTEM INFORMATION, the UE should send RNTI RECONFIGURATION COMPLETE message to let UTRAN know that the re-assignment of RNTI is completed.

 In case the UE receives no PRACH information nor SCCPCH information nor new C/U-RNTI in CELL UPDATE CONFIRM message and no update is initiated in the UE for PRACH and SCCPCH given in SYSTEM INFORMATION, UE does not need to send any message.

 Cell update procedure description is modified accordingly.

(2) Transition from CELL_DCH to CELL_FACH

Currently for transition from CELL_DCH to CELL_FACH state, there are 2 alternatives. First alternative is that UTRAN indicates which cell to select by indicating PRACH and SCCPCH information of the target cell. Second alternative is that UTRAN does not indicate which cell to select but UE select which cell to camp on. In the second alternative, UE has to select a cell and send CELL UPDATE message to the UTRAN to let UTRAN know which cell the UE has selected. In this case, CELL UPDATE and CELL UDATE CONFIRM are used between the RB command message and RB command complete message (ex. Between RB RELEASE and RB RELEASE COMPLETE).

Cell update procedure description is revised in order to make above procedure more clear.

(3) Cell update cause: radio bearer control response

In case of transition from CELL_DCH to CELL_FACH, several RB control messages can be used such as RB RELEASE, RB RECONFIGURATION, TRANSPORT CHANNEL RECONFIGURATION and PHYSICAL CHANNEL RECONFIGURATION. In this case, UTRAN is waiting for response messages such as RB RELEASE, RB RECONFIGURATION, TRANSPORT CHANNEL RECONFIGURATION and PHYSICAL CHANNEL RECONFIGURATION. As mentioned above, in the second alternative, cell update procedure is initiated within RB control procedure. For cause value for this cell updating, "RB control response" exists in current tabular format (section10.3.3.3).

If UE uses "cell reselection" for this cell updating cause, UTRAN will not know whether this cell updating is originated by RB command message or UE mobility .Considering the SRNC relocation case in cell update procedure, "RB control response" exists in current IE "Cell update cause".

When the SRNC receives Cell UPDATE message via RRC or RNSAP with cause value "RB control response", SRNC understands that the UE has received RB control message. If SRNC decides to initiate SRNC relocation, the SRNC has to indicate target RNC to establish new configuration.

If cause value is not "RB control response", same configuration with SRNC will be established in target SRNC. If cause value is "RB control response", new configuration can be established in target SRNC.

After establishment of new configuration, new SRNC(target RNC) sends CELL UPDATE CONFIRM message and waits for RB command complete message. The UE receives CELL UPDATE CONFIRM message and sends RB control complete message.

Cell update procedure description is modified accordingly.

Clauses affected: 8.3.1, 8.5.8, 10.2.52,

Other specs affected:

- | | | | |
|-------------------------------|--------------------------|----------------|--|
| Other 3G core specifications | <input type="checkbox"/> | → List of CRs: | |
| Other GSM core specifications | <input type="checkbox"/> | → List of CRs: | |
| MS test specifications | <input type="checkbox"/> | → List of CRs: | |
| BSS test specifications | <input type="checkbox"/> | → List of CRs: | |
| O&M specifications | <input type="checkbox"/> | → List of CRs: | |

Other comments:



help.doc

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

8.3.1 Cell update

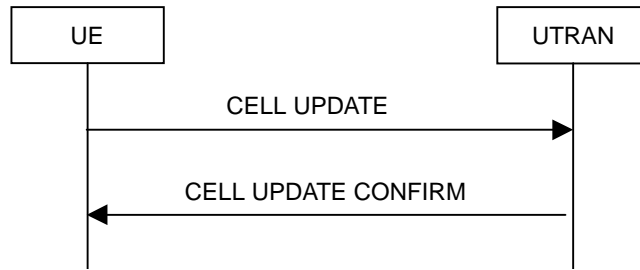


Figure 33: Cell update procedure, basic flow

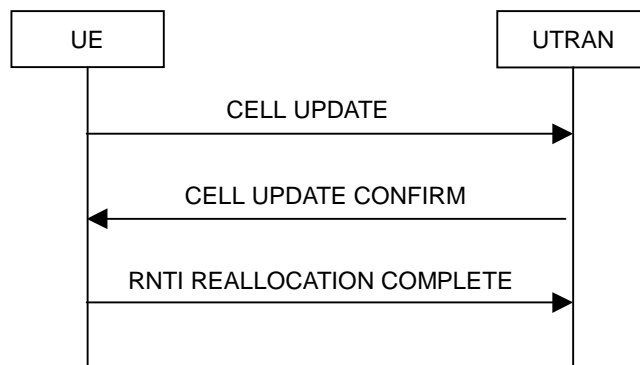


Figure 34: Cell update procedure with RNTI reallocation

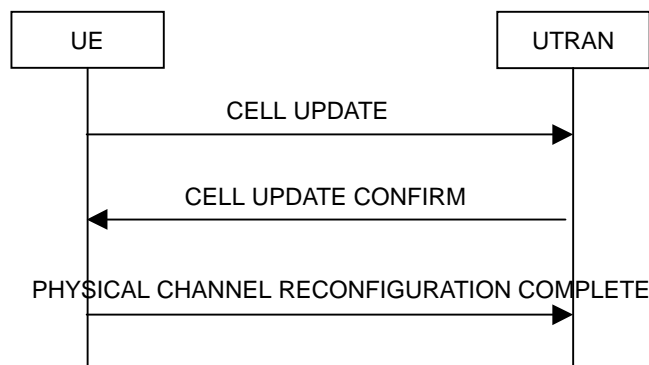
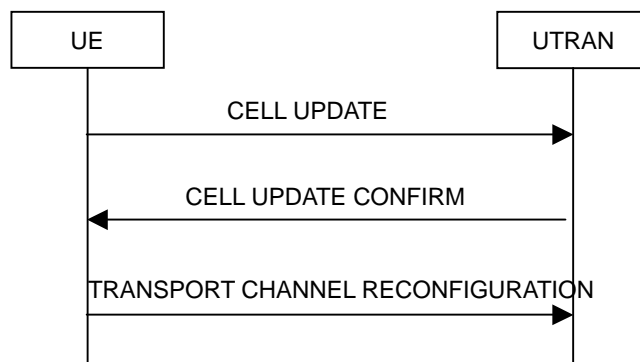


Figure 35: Cell update procedure with physical channel reconfiguration



[Figure 35a: Cell update procedure with transport channel reconfiguration](#)

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. It may also be used for supervision of the RRC connection, even if no cell reselection takes place. The cell update procedure can also be used to re-configure 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 in an AM RLC entity for the signalling link (see note).

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 may apply the cell update procedure for a number of purposes. The specific requirements the UE shall take into account for each case are specified in the following:

- Upon initiation of the procedure, the UE shall set the variable `PROTOCOL_ERROR_INDICATOR` to FALSE.
- In CELL_FACH or CELL_PCH state, the UE shall perform the cell update procedure when selecting another cell (cell reselection).
- In CELL_FACH and CELL_PCH state, the UE shall perform the cell update procedure upon expiry of T305 while the UE is in the service area. The UE shall only perform this periodic cell updating if configured by means of the IE "Information for periodical cell and URA update" in System Information Block Type 2. The UE shall initially start timer T305 upon entering CELL_FACH or CELL_PCH state([periodic cell update](#)).
- [In transition to CELL_DCH to CELL_FACH by receiving RB control message with no indication which cell to camp, the UE should select a cell and perform the cell update procedure \(RB control response\)](#).

In CELL_PCH state and URA_PCH state, the UE shall initiate the cell update procedure if it wants to transmit UL data([UL data transmission](#)).

- In CELL_PCH and URA_PCH state, the UE shall perform the cell update procedure when receiving a PAGING TYPE 1 message as in subclause 8.1.2.3([paging response](#)).
- moving to CELL_FACH state, if not already in that state.
- delete any C-RNTI and suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.
- sending a CELL UPDATE message on the uplink CCCH.
- starting timer T302 and resetting counter V302.

The IE "cell update cause" shall be used as follows:

- In case of cell reselection: "cell reselection";
- In case of periodic cell updating: "periodic cell update";
- [In case of RB control response: " RB control response "](#);
- In case of UL data transmission: "UL data transmission";
- In case of paging response: "paging response".

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.

The IE "AM_RLC error indication" shall be set when the UE detects unrecoverable error in an AM RLC entity for the signalling link.

The UE shall include an intra-frequency measurement report in the CELL UPDATE message, 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.

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 that is specified in subclause 8.5.5, the UE shall

- start timer T307;
- search for cell to camp.

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 a 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 should transmit a CELL UPDATE CONFIRM message on the downlink DCCH.

When the UTRAN detects AM_RLC error, it waits for CELL UPDATE message from the UE and when the UTRAN receives it, UTRAN commands the UE to re-configure AM_RLC by sending CELL UPDATE CONFIRM message. This procedure can be used not only in the case of AM_RLC error but also in the case that UTRAN wants to re-configure 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.

8.3.1.5 Reception of the CELL UPDATE CONFIRM message by the UE

Upon receiving the CELL UPDATE CONFIRM message, the UE shall stop timer T302.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the CELL UPDATE CONFIRM message includes the IE "CN domain identity" and the IE "NAS system information", the UE shall forward the content of the IE "NAS system information" to the non-access stratum entity of the UE identified by the IE "CN domain identity".

If the CELL UPDATE CONFIRM message includes the IE "URA-Id" the UE shall store this URA identity.

If IE "DRX indicator" in the CELL UPDATE CONFIRM message is not set to "no DRX", no RRC response message is sent to the UTRAN.

If the CELL UPDATE CONFIRM message does not include IE "new C-RNTI", IE "new U-RNTI", IE "PRACH info" nor IE "Secondary CCPCH info", following actions are taken:

- If cell update is due to "periodical cell update", no RRC response message is sent to the UTRAN.
- If cell update is due to "UL data transmission" or "paging response" and if there is no difference in TFS and/or TFCS stored in UE compared to PRACH/SCCPCH indicated in the broadcast system information, PHYSICAL

CHANNEL RECONFIGURATION COMPLETE message is sent to the UTRAN using the PRACH indicated in the broadcast system information.

- If cell update is due to “UL data transmission” or “paging response” and if there is a difference in TFS and/or TFCS stored in UE compared to PRACH/SCCPCH indicated in the broadcast system information., TRANSPORT CHANNEL RECONFIGURATION COMPLETE message is sent to the UTRAN using the PRACH indicated in the broadcast system information.
- No case for cell update due to “cell reselection” or “RB control response”.

If the CELL UPDATE CONFIRM message includes the IE "new C-RNTI" and optionally the IE "new U-RNTI" but does not include IE "PRACH info" or IE "Secondary CCPCH info", the UE shall update its identities and following actions are taken:

- If cell update is due to “periodical cell update”, transmit an RNTI REALLOCATION COMPLETE message on the uplink DCCH using the PRACH ~~stored in the UE~~indicated in the broadcast system information.
- If cell update is due to “cell reselection”, “UL data transmission” or “paging response” and if there is no difference in TFS and/or TFCS stored in UE compared to PRACH/SCCPCH indicated in the broadcast system information, PHYSICAL CHANNEL RECONFIGURATION COMPLETE message is sent to the UTRAN using the PRACH indicated in the broadcast system information.
- If cell update is due to “UL data transmission” or “paging response” and if there is a difference in TFS and/or TFCS stored in UE compared to PRACH/SCCPCH indicated in the broadcast system information., TRANSPORT CHANNEL RECONFIGURATION COMPLETE message is sent to the UTRAN using the PRACH indicated in the broadcast system information.
- If cell update is due to “RB control response”, transmit a RB control response message on the uplink DCCH using the PRACH indicated in the broadcast system information.

If the CELL UPDATE CONFIRM message includes the IE "RLC re-configuration indicator (for C-plane)" the UE shall reconfigure the AM RLC entities on C-plane.

If the CELL UPDATE CONFIRM message includes the IE "RLC re-configuration indicator (for U-plane)" the UE shall reconfigure the AM RLC entities on U-plane.

If the CELL UPDATE CONFIRM message includes the IE "PRACH info" and/or the IE "Secondary CCPCH info", the UE shall

- Perform the actions stated in subclauses 8.5.7.6.2 and 8.5.7.6.3.
- update its identities if the CELL UPDATE CONFIRM message includes the IE new C-RNTI" and optionally the IE "new U-RNTI".
- If cell update is due to “periodical cell update”, “cell reselection”, “UL data transmission” or “paging response”, transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using the PRACH indicated in CELL UPDATE CONFIRM message.
- If cell update is due to “RB control response”, transmit a RB control response message on the uplink DCCH using the PRACH indicated in the broadcast system information.

The UE shall enter a state according to subclause 8.5.8 applied on the CELL UPDATE CONFIRM message, ~~unless specified otherwise below.~~

~~If the IE "Cell update cause" in CELL UPDATE message was set to "UL data transmission" or "paging response", the UE shall remain in CELL_FACH state.~~

~~If the IE "Cell update cause" in CELL UPDATE message was set to "periodic cell update" or "cell reselection", the UE shall return to the state it was in before initiating the cell update procedure.~~

~~In case none of the above conditions apply, the UE shall return to the state it was in before initiating the cell update procedure.~~

In case the UE ends in CELL_FACH or CELL_PCH state and periodic cell updating is configured, it shall reset timer T305.

In case the UE does not end in CELL_FACH state, it shall delete its C-RNTI [and PRACH/SCCPCH information](#).

If the UE remains in CELL_FACH state and the CELL UPDATE CONFIRM message includes the IE "New C-RNTI" the UE shall then resume data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

8.3.1.6 Invalid CELL UPDATE CONFIRM message

If the UE receives an CELL UPDATE CONFIRM 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:

The UE shall check the value of V302 and

- If V302 is smaller or equal than N302, the UE shall set the variable PROTOCOL_ERROR_INDICATOR to TRUE, retransmit a CELL UPDATE message on the uplink CCCH, restart timer T302 and increase counter V302. The IE "Cell update cause" shall be set to the event causing the transmission of the CELL UPDATE message, see subclause 8.3.1.2.
- If V302 is greater than N302, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated 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.

8.3.1.7 T302 expiry or cell reselection

- Upon expiry of timer T302; and/or
- upon reselection of another UTRA cell when waiting for the CELL UPDATE CONFIRM message,

the UE shall check the value of V302 and:

- If V302 is smaller or equal than N302, the UE shall retransmit a CELL UPDATE message on the uplink CCCH, restart timer T302 and increase counter V302. The IE "Cell update cause" shall be set to the event causing the transmission of the CELL UPDATE message, see subclause 8.3.1.2.
- If V302 is greater than N302, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated 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

8.3.1.8 Reception of the RNTI REALLOCATION COMPLETE message by the UTRAN

See subclause 8.3.3.4.

8.3.1.9 Reception of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message by the UTRAN

When the UTRAN receives PHYSICAL CHANNEL RECONFIGURATION message, the procedure ends.

8.3.1.10 Reception of the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message by the UTRAN

When the UTRAN receives TRANSPORT CHANNEL RECONFIGURATION message, the procedure ends.

8.5.8 Generic state transition rules depending on received information elements

The state the UE shall move to depends on the presence of a number of IEs as follows:

IF either IE "Uplink DPCH info" OR IE "Downlink DPCH info" is included THEN

The UE shall move to CELL_DCH state

ELSIF "DRX indicator" is set to "DRX with Cell updating" THEN

The UE shall move to CELL_PCH state

ELSIF "DRX indicator" is set to "DRX with URA updating" THEN

The UE shall move to URA_PCH state

ELSIF "DRX indicator" is set to "noDRX" THEN

The UE shall move to CELL_FACH state

END

~~Make IE "DRX Indicator" M (Mandatory) in the following messages:~~

- ~~— CELL UPDATE CONFIRM~~
- ~~— PHYSICAL CHANNEL RECONFIGURATION~~
- ~~— RADIO BEARER RECONFIGURATION~~
- ~~— RADIO BEARER RELEASE~~
- ~~— RADIO BEARER SETUP~~
- ~~— RNTI REALLOCATION~~
- ~~— RRC CONNECTION RE-ESTABLISHMENT~~
- ~~— TRANSPORT CHANNEL RECONFIGURATION~~
- ~~— URA UPDATE CONFIRM~~

~~Moreover, make IE "UTRAN DRX cycle length coefficient" Mandatory in message URA UPDATE CONFIRM.~~

10.2.52 TRANSPORT CHANNEL RECONFIGURATION COMPLETE

This message is sent from the UE when a transport channel reconfiguration has been done.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE mode	OP			
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.69	This information element shall be present in case of handover procedure. Calculated timing advance value for the new cell after handover in a synchronous TDD network (no data)
>FDD				
RB Information elements				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.10	
RB with PDCP information list	OP	1 to <MaxRBWithPDCPCo unt>		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 10.3.4.17	

Multi bound	Explanation
<i>MaxRBWithPDCPCount</i>	Maximum number of radio bearers which can have PDCP entity configured

~~NOTE: The usage of this message for indicating the cell the UE will select in the DCH >RACH/FACH case, is FFS.~~

CHANGE REQUEST

25.331 CR 304r1

Current Version: **3.2.0**

For submission to: **TSG-RAN #8** for approval for information strategic non-strategic (for SMG Use only)

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

Source: TSG-RAN WG2 **Date:** 7.4.2000

Subject: System information modification procedure

Work item:

Category:	F Correction <input checked="" type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/>
<small>(only one category Shall be marked With an X)</small>	A Corresponds to a correction in an earlier release <input type="checkbox"/>		Release 96 <input type="checkbox"/>
	B Addition of feature <input type="checkbox"/>		Release 97 <input type="checkbox"/>
	C Functional modification of feature <input type="checkbox"/>		Release 98 <input type="checkbox"/>
	D Editorial modification <input type="checkbox"/>		Release 99 <input checked="" type="checkbox"/>
			Release 00 <input type="checkbox"/>

Reason for change: The requirements which are set to the network operation in case of Modification of system information need clarification in TS25.331.

For simplicity and to avoid misinterpretations, the order in which the system information modification is made by network on BCH should be described similarly in subclauses 8.1.1.4.1 and 8.1.1.4.3.

In both of these subclauses MIB "value tag" shall change. The first modified system information which is sent on BCH should be the MIB segment as the MIB segment describes the changes in other system information blocks and the UE must first read the new MIB sement before it can find out what other information is changed.

This change request proposes to uniform the procedure used on BCH in subclauses 8.1.1.4.1 and 8.1.1.4.3. It also proposes to indicate more clearly that it is the new MIB segment that is sent first in the radio interface. Finally, it is proposed that the 'starting time' moment in chapter 8.1.1.4.3 is bound to the moment when the first new MIB segment is sent in the radio interface. This causes modification in 'BCCH modification info' IE as the MIB segment repetition rate and position are fixed by the specification.

Clauses affected: 8.1.1.4.1, 8.1.1.4.3, 10.3.8.1, 11.3.8

Other specs affected:	Other 3G core specifications <input type="checkbox"/>	→ List of CRs:	
	Other GSM core specifications <input type="checkbox"/>	→ List of CRs:	
	MS test specifications <input type="checkbox"/>	→ List of CRs:	
	BSS test specifications <input type="checkbox"/>	→ List of CRs:	
	O&M specifications <input type="checkbox"/>	→ List of CRs:	

Other comments:

8.1.1.4 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 block, UTRAN shall indicate when any of the information elements are modified by changing the value of Value TAG. [Even if the value tag does not change, the UE shall consider the system information block to be invalid after a period of [TBD] hours from reception.] In addition to this, there are system information block types that contain information elements changing too frequently to be indicated by change in value tag. This type of system information blocks ~~are~~ not linked to a value tag in the master information block or higher-level system information block. All stored system information blocks shall be considered as invalid after the UE has been switched off.

8.1.1.4.1 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.
- ~~— start to send the updated system information block on the BCCH instead of the old system information block.~~
- If the updated system information block is linked to a higher level system information block, update the higher level system information 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 information 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 in order to reach all UEs in state CELL_FACH. UTRAN may repeat the new master information block on the FACH 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.
- It should be noted that for the proper operation of the BCCH Modification Information sent on the 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.

On reception of the PAGING TYPE 1 message, the UE shall

- 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.

At 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 IE "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. On reception of a modified system information block, the UE shall perform the actions specified in subclause 8.1.1.5.

8.1.1.4.3 Time critical 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. If such case, the UTRAN performs the following actions to indicate the change to the UEs:

- send the message PAGING TYPE 1 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 time 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 in order to reach all UEs in state CELL_FACH. In the IE "BCCH Modification Information", UTRAN shall indicate the time 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 the FACH to increase the probability of proper reception in all UEs needing the information.
- ~~update the actual system information and change the "value tag" in the corresponding system information block.~~
- - If the updated system information block is linked to a higher level system information block, update the higher level system information 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 information block and change the "value tag" of the master information block.
- at the indicated time, start to send first the 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.

At reception of the PAGING TYPE 1 or SYSTEM INFORMATION CHANGE INDICATION message, the UE shall

- wait until the starting time, indicated in the IE "BCCH Modification Information". When the starting time occurs, the UE shall read the new master information block.

At reception of the new master information block, the UE shall:

- store the new "value tag" of the master information block.
- check the IE "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. At reception of a modified system information block, the UE shall perform the actions specified in subclause 8.1.1.5.

If the UE can not find the master information block, it can assume that a physical reconfiguration has occurred and perform a new cell search.

10.3.8.1 BCCH modification info

Indicates modification of the System Information on BCCH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB Value tag	MP			
BCCH Modification time	OP		Integer (0.. <u>8.16.24</u> ...4088409 4 by step of <u>2</u>)	Even-All SFN values in which MIB may be mapped are allowed.

11.3.8 Other information elements

```

BCCH-ModificationInfo ::= SEQUENCE {
    mib-ValueTag          MIB-ValueTag,
    bcch-ModificationTime BCCH-ModificationTime OPTIONAL
}
    
```

```

-- Actual value = IE value * 82
BCCH-ModificationTime ::= INTEGER (0..5112047)
    
```


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 305	Current Version: 3.2.0
GSM (AA.BB) or 3G (AA.BBB) specification number ↑	↑ CR number as allocated by MCC support team	
For submission to: TSG-RAN #8 <small>list expected approval meeting # here ↑</small>	for approval for information <input checked="" type="checkbox"/>	strategic <input type="checkbox"/> non-strategic <input type="checkbox"/> <small>(for SMG use only)</small>

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

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

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

Subject: Functional descriptions of the RRC messages

Work item: _____

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

Reason for change: Functional descriptions of the RRC protocol messages were missing from the specification. Notes are removed.

Clauses affected: 10.2.1, 10.2.2, 10.2.3, 10.2.6, 10.2.7, 10.2.8, 10.2.10, 10.2.13, 10.2.14, 10.2.15, 10.2.20, 10.2.25, 10.2.26, 10.2.27, 10.2.28, 10.2.29, 10.2.30, 10.2.31, 10.2.32, 10.2.35, 10.2.36, 10.2.37, 10.2.39, 10.2.40, 10.2.45, 10.2.46, 10.2.48, 10.2.53, 10.2.54, 10.2.57, 10.2.58, 10.2.59

Other specs affected:	Other 3G core specifications <input type="checkbox"/> Other GSM core specifications <input type="checkbox"/> MS test specifications <input type="checkbox"/> BSS test specifications <input type="checkbox"/> O&M specifications <input type="checkbox"/>	→ List of CRs: _____ → List of CRs: _____ → List of CRs: _____ → List of CRs: _____ → List of CRs: _____
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Other comments: _____



help.doc

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

10.2.1 ACTIVE SET UPDATE

NOTE: Only for FDD

~~NOTE: Functional description of this message to be included here~~

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	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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 10.3.2.45	
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 <MaxRBWithPDCPCount>		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 10.3.4.17	
Phy CH information elements				
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing "maximum UL TX power."
Downlink radio resources				
Radio link addition information	OP	1 to <MaxAddRLcount>		Radio link addition information required for each RL to add
>Radio link addition information	MP		Radio link addition information 10.3.6.50	
Radio link removal information	OP	1 to <MaxDelRLcount>		Radio link removal information required for each RL to remove
> Radio link removal information	MP		Radio link removal information 10.3.6.51	
TX Diversity Mode	MD		TX Diversity Mode 10.3.6.63	Default value is the existing TX diversity mode.
SSDT information	OP		SSDT information 10.3.6.57	

Multi Bound	Explanation
MaxRBWithPDCPCount	Maximum number of radio bearers which can have PDCP entity configured
MaxAddRLcount	Maximum number of radio links which can be added
MaxDelRLcount	Maximum number of radio links which can be removed/deleted

10.2.2 ACTIVE SET UPDATE COMPLETE

NOTE: For FDD only

~~NOTE: Functional description of this message to be included here~~

This message is sent by UE when active set update has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
RB Information elements				
Radio bearer uplink ciphering activation time info	OP		RBactivation time info 10.3.4.10	
RB with PDCP information list	OP	1 to <MaxRBWithPDCPCount>		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 10.3.4.17	

Multi bound	Explanation
MaxRBWithPDCPCount	Maximum number of radio bearers which can have PDCP entity configured

10.2.3 ACTIVE SET UPDATE FAILURE

NOTE: Only for FDD

~~NOTE: Functional description of this message to be included here~~

This message is sent by UE if the update of the active set has failed, e.g. because the radio link is not a part of the active set.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error indication 10.3.3.12	

10.2.6 DOWNLINK DIRECT TRANSFER

~~NOTE:— Functional description of this message to be included here~~

This message is sent by UTRAN to transfer higher layer messages.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN -> UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
CN information elements				
CN Domain Identity	MP		Core Network Domain Identity 10.3.1.1	
NAS message	MP		NAS message 10.3.1.8	

10.2.7 DOWNLINK OUTER LOOP CONTROL

~~NOTE:— Functional description of this message to be included here~~

This message is sent to suspend and resume the setting of the SIR target value for downlink outer loop power control.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
PhyCH information elements				
Downlink Outer Loop Control	MP		Downlink Outer Loop Control 10.3.6.20	Indicates whether the UE is allowed or not to increase its SIR-target value above its current value
Downlink DPCH power control information	MD		Downlink DPCH power control information 10.3.6.16	Default value is the existing "Downlink DPCH power control information"

10.2.8 HANDOVER TO UTRAN COMMAND

~~NOTE: Functional description of this message to be included here~~

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	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 10.3.4.8	
CHOICE specification mode	MP			
>Complete specification				
RB information elements				
>>Signalling RB information to setup list	MP	1 to <MaxS RBcount>		
>>>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
>>RB information to setup list	MP	1 to <MaxSetupRB count>		
>>>RB information to setup	MP		RB information to setup 10.3.4.15	
Uplink transport channels				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.21	
>>Added or Reconfigured TrCH information	MP	1 to <MaxReconfAddedTrCH Count>		
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL	

Information Element	Need	Multi	Type and reference	Semantics description
			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 all transport channels 10.3.5.7	
>>Added or Reconfigured TrCH information	MP	1 to <MaxReconfAddedTrCH Count>		
>>>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 10.3.6.65	
Downlink radio resources				
>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.17	
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
>>CHOICE mode	MP			
>>>FDD				
>>>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>>Downlink information per radio link		1 to <MaxRLcount >		
>>>Downlink information for each radio link			Downlink information for each radio link 10.3.6.18	
>Preconfiguration				
>>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
>>Uplink DPCH info	MP		Uplink DPCH info Short 10.3.6.66	
Downlink radio resources				
>>Downlink information common for all radio links				
>>>Downlink DPCH info common for all radio links	MP		Downlink DPCH info common for all RL 10.3.6.14	
>>Downlink information per radio link	MP	1 to <MaxRLcount >		Send downlink information for each radio link to be set-up. In TDD MaxRLcount is 1.
>>>Downlink information for each radio link			Downlink information for each RL short 10.3.6.19	
>>>Downlink DPCH info for each radio link	MP		Downlink DPCH info for each RL 10.3.6.15	
Frequency info	MP		Frequency info 10.3.6.24	
Maximum allowed UL TX power	MP			
CHOICE mode	MP			

Information Element	Need	Multi	Type and reference	Semantics description
>TDD				
>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.42	
>> Constant Value	MP		Constant value 10.3.6.9	
>>UL Interference	MP		UL interference 10.3.6.64	
>>Cell parameters ID	MP		Integer (0...127)	Description TBI

Multi Bound	Explanation
<i>MaxRlcount</i>	Maximum number of radio links
MaxSetupRBcount	The maximum number of RBs to setup.

10.2.10 INITIAL DIRECT TRANSFER

~~NOTE: Functional description of this message to be included here~~

This message is used by UE to establish a signalling connection and carry higher layer messages.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE -> UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
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 session
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	

10.2.13 MEASUREMENT CONTROL

NOTE:— Functional description of this message to be included here

This message is sent by UTRAN to setup, modify or release a measurement in the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Measurement Information elements				
Measurement Identity Number	MP		Measurement Identity Number 10.3.7.73	
Measurement Command	MP		Measurement Command 10.3.7.71	
Measurement Reporting Mode	OP		Measurement Reporting Mode 10.3.7.74	
Additional measurements list	OP		Additional measurements list 10.3.7.1	
CHOICE Measurement type	CV <i>command</i>			
>Intra-frequency measurement			Intra-frequency measurement 10.3.7.36	
>Inter-frequency measurement			Inter-frequency measurement 10.3.7.16	
>Inter-system measurement			Inter-system measurement 10.3.7.27	
>LCS measurement			LCS measurement 10.3.7.57	
>Traffic Volume measurement			Traffic Volume measurement 10.3.7.94	
>Quality measurement			Quality measurement 10.3.7.80	
>UE internal measurement			UE internal measurement 10.3.7.103	

Condition	Explanation
<i>Command</i>	The IE is mandatory if the "Measurement command" IE is set to "Setup", optional if the "Measurement command" IE is set to "modify", otherwise the IE is not needed

10.2.14 MEASUREMENT CONTROL FAILURE

~~NOTE: Functional description of this message to be included here~~

This message is sent by UE, if it can not initiate a measurement as instructed by UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.12	

10.2.15 MEASUREMENT REPORT

~~NOTE: Functional description of this message to be included here~~

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	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Measurement Information Elements				
Measurement identity number	MP		Measurement identity number 10.3.7.73	
Measured Results	OP		Measured Results 10.3.7.69	
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	

Multi Bound	Explanation
<i>MaxAdditionalMeas</i>	Maximum number of additional measurements for a given measurement identity

10.2.20 PHYSICAL CHANNEL RECONFIGURATION FAILURE

~~NOTE: Functional description of this message to be included here~~

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to assign, replace or release a set of physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message type	MP		Message type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.12	

10.2.25 RADIO BEARER RECONFIGURATION FAILURE

~~NOTE: Functional description of this message to be included here~~

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to establish the physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.12	

10.2.26 RADIO BEARER RELEASE

NOTE:— ~~Functional description of this message to be included here~~

This message is used by UTRAN to release a radio bearer. It can also include modifications to the configurations of transport channels and/or physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
RB information to release list	MP	1 to <MaxRelR Bcount>		
>RB information to release	MP		RB information to release 10.3.4.14	
RB information to be affected list	OP	1 to <MaxOther RBcount>		
>RB information to be affected	MP		RB information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all	OP		UL Transport channel	

Information Element	Need	Multi	Type and reference	Semantics description
transport channels			information common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconfAddTrCHCount>		
>>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>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 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			At least one spare choice

Information Element	Need	Multi	Type and reference	Semantics description
				(criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
CHOICE mode	MP			
>FDD				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
<i>MaxRLcount</i>	Maximum number of radio links
<i>MaxRelRBcount</i>	Maximum number of RBs to be released
<i>MaxOtherRBcount</i>	Maximum number of Other RBs (i.e., RBs not being released) affected by the procedure
<i>MaxDelTrCHcount</i>	Maximum number of Transport Channels to be removed
<i>MaxSysInfoBlockFACHCount</i>	Maximum number of references to system information blocks on the FACH
<i>MaxReconfAddTrCHCount</i>	Maximum number of transport channels to add and reconfigure
<i>MaxDRACReconAddTrCHCount</i>	Maximum number of transport channels to add and reconfigure for DRAC

10.2.27 RADIO BEARER RELEASE COMPLETE

~~NOTE: Functional description of this message to be included here~~

This message is sent from the UE when radio bearer release has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE mode	MP			
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.69	This information element shall be present in case of handover procedure Calculated timing advance value for the new cell after handover in a synchronous TDD network
>FDD				(no data)
RB Information elements				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.10	

10.2.28 RADIO BEARER RELEASE FAILURE

~~NOTE: Functional description of this message to be included here~~

This message is sent by UE if the configuration given by UTRAN is unacceptable or if radio bearer can not be released.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.12	

10.2.29 RADIO BEARER SETUP

NOTE:— ~~Functional description of this message to be included here~~

This message is sent by UTRAN to the UE to establish new radio bearer(s). It can also include modifications to the configurations of transport channels and/or physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
Signalling RB information to setup list	OP	1 to <MaxSRBcount>		For each signalling radio bearer established
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
RAB information to setup list	MP	1 to <MaxRABcount>		For each RAB established
>RAB information for setup	MP		RAB information to setup 10.3.4.9	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB	

Information Element	Need	Multi	Type and reference	Semantics description
			information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconfAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>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 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency	Default value is the existing

Information Element	Need	Multi	Type and reference	Semantics description
			info 10.3.6.24	value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxRLcount	Maximum number of radio links
MaxDelTrCHcount	Maximum number of Transport Channels to be removed
MaxReconfAddcount	Maximum number of Transport Channels reconfigured or added
MaxDRACReconfAddcount	Maximum number of Transport Channels reconfigured or added for DRAC
MaxSRBcount	Maximum number of signalling RBs that could be setup with this message
MaxRABcount	Maximum number of RABs that could be setup with this message
MaxRBcount	Maximum number of RBs pre RAB that could be setup with this message
MaxOtherRBcount	Maximum number of Other RBs (i.e., RBs not being released) affected by the procedure

10.2.30 RADIO BEARER SETUP COMPLETE

~~NOTE:— Functional description of this message to be included here~~

This message is sent by UE to confirm the establishment of the radio bearer.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE mode	OP			
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.69	This information element shall be present in case of handover procedure. Calculated timing advance value for the new cell after handover in a synchronous TDD network (no data)
>FDD				
Hyper frame number	MP		Hyper frame number 10.3.3.13	
RB Information elements				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.10	

10.2.31 RADIO BEARER SETUP FAILURE

~~NOTE:— Functional description of this message to be included here~~

This message is sent by UE, if it does not support the configuration given by UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.12	

10.2.32 RNTI REALLOCATION

~~NOTE: Functional description of this message to be included here~~

This message is used by UTRAN to allocate a new RNTI to a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
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 <MaxRBWithPDCPCount>		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 10.3.4.17	

10.2.35 RRC CONNECTION RE-ESTABLISHMENT

~~NOTE: Functional description of this message to be included here~~

This message is sent by UTRAN in order to re-establish an RRC connection.

RLC-SAP: UM

Logical channel: CCCH, DCCH

Direction: UTRAN → UE

Information Element	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 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
Signalling RB information to setup list	OP	1 to <MaxSRBcount>		For each signalling radio bearer established
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
RAB information for setup list	OP	1 to <MaxRABcount>		For each RAB established
>RAB information for setup	MP		RAB information for setup 10.3.4.9	
RB information to release list	OP	1 to <MaxRelRBCount>		

Information Element	Need	Multi	Type and reference	Semantics description
>RB information to release	MP		RB information to release 10.3.4.14	
RB information to reconfigure list	OP	1 to <MaxReconRBcount>		
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.13	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconfAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>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 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTr		

Information Element	Need	Multi	Type and reference	Semantics description
		CHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCH Count>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
			Maximum allowed UL TX power 10.3.6.27	
Maximum allowed UL TX power	MD			Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP		Uplink DPCH info 10.3.6.65	At least one spare choice (criticality = reject) required
>Uplink DPCH info			PRACH Info (for RACH) 10.3.6.36	
>PRACH Info (for RACH)				
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Condition	Explanation
CCCH	This IE is only sent when CCCH is used

Multi Bound	Explanation
MaxSRBcount	Maximum number of signalling RBs that could be setup with this message
MaxRABcount	Maximum number of RABs that could be setup with this message
MaxSetupRBcount	Maximum number of RBs to be setup
MaxRelRBcount	Maximum number of RBs to be released
MaxReconRBcount	Maximum number of RBs to be reconfigured
MaxOtherRBcount	Maximum number of RBs to be affected.
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconfAddTrCHCount	Maximum number of transport channels to add and reconfigure
MaxDRACReconAddTrCHCount	Maximum number of transport channels to add and reconfigure for DRAC
MaxRLcount	Maximum number of radio links

10.2.36 RRC CONNECTION RE-ESTABLISHMENT COMPLETE

~~NOTE: — Functional description of this message to be included here~~

This message is used by UE to confirm the re-establishment of an RRC connection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE mode	OP			
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.69	This information element shall be present in case of handover procedure. Calculated timing advance value for the new cell after handover in a synchronous TDD network
>FDD				(no data)
RB Information elements				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.10	
RB with PDCP information list	OP	1 to <MaxRBWithPDCPCount>		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 10.3.4.17	

Multi bound	Explanation
<i>MaxRBWithPDCPCount</i>	Maximum number of radio bearers which can have PDCP entity configured

10.2.37 RRC CONNECTION RE-ESTABLISHMENT REQUEST

~~NOTE: Functional description of this message to be included here~~

This message is used by UE to request for the re-establishment of an RRC connection.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
U-RNTI	MP		U-RNTI 10.3.3.45	
Integrity check info	CH		Integrity check info 10.3.3.16	
Protocol error indicator	MD		Protocol error indicator 10.3.3.29	Default value is FALSE
Measurement information elements				
Measured results on RACH	OP		Measured results on RACH 10.3.7.70	
Other information elements				
Protocol error information	<i>CV-ProtErr</i>		Protocol error information 10.3.8.9	

Condition	Explanation
<i>ProtErr</i>	If the IE "Protocol error indicator" has the value "TRUE"

10.2.39 RRC CONNECTION RELEASE

~~NOTE: Functional description of this message to be included here~~

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

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Number of RRC Message Transmissions	CH Cell_DCH		Number of RRC Message Transmissions 10.3.3.23	
Release cause	MP		Release cause 10.3.3.33	

Condition	Explanation
Cell_DCH	This IE is present when UE is in CELL_DCH state.

10.2.40 RRC CONNECTION RELEASE COMPLETE

~~NOTE: Functional description of this message to be included here~~

This message is sent by UE to confirm that the RRC connection has been released.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	

10.2.45 SECURITY MODE COMMAND

This message is sent by UTRAN to start or reconfigure ciphering and/or integrity protection parameters.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN to UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Ciphering algorithm	MP		Ciphering algorithm 10.3.3.4	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	Only present if ciphering shall be controlled
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	Only present if integrity protection shall be controlled
CN Information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	Indicates which cipher and integrity protection keys are applicable

10.2.46 SECURITY MODE COMPLETE

This message is sent by UE to confirm the reconfiguration of ciphering and/or integrity protection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Hyper frame number	OP		Hyper frame number 10.3.3.13	Only present if there is no active radio bearers towards "CN domain identity" where the SECURITY MODE COMMAND was initiated or if none of these radio bearers uses ciphered connection.
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
RB Information elements				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.10	

10.2.48 SIGNALLING CONNECTION RELEASE

~~NOTE: Functional description of this message to be included here~~

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
CN information elements				
Signalling Flow related information list	MP	1 to <maxFlowID>		Flow identifier to be provided for each signalling flow to be released.
>Flow Identifier	MP		Flow Identifier 10.3.1.4	

Multi Bound	Explanation
<i>MaxFlowID</i>	Maximum number of flow identifiers

10.2.53 TRANSPORT CHANNEL RECONFIGURATION FAILURE

NOTE: ~~Functional description of this message to be included here~~

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to establish the physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.12	

10.2.54 TRANSPORT FORMAT COMBINATION CONTROL

NOTE: ~~Functional description of this message to be included here~~

This message is sent by UTRAN to control the uplink transport format combination within the allowed transport format combination set.

RLC-SAP: TM, AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	CV-notTM		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
TrCH information elements				
CHOICE channel requirement	MP			
> DPCH TFCS in uplink	OP		Transport Format Combination subset 10.3.5.19	
>TFC Control duration	CV-notTMopt		TFC Control duration 10.3.6.59	

Condition	Explanation
<i>NotTM</i>	The message type is not included when transmitting the message on the transparent mode signalling DCCH
<i>NotTMopt</i>	The information element is not included when transmitting the message on the transparent mode signalling DCCH and is optional otherwise.

If transparent mode signalling is used and the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.x.

10.2.57 UE CAPABILITY INFORMATION

~~NOTE: Functional description of this message to be included here~~

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	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
UE radio access capability	OP		UE radio access capability 10.3.3.41	
Other information elements				
UE system specific capability	OP		Inter-system message 10.3.8.6	Includes inter-system classmark

10.2.58 UE CAPABILITY INFORMATION CONFIRM

~~NOTE: Functional description of this message to be included here~~

This message is sent by UTRAN to confirm that UE capability information has been received.

RLC-SAP: UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied

10.2.59 UPLINK DIRECT TRANSFER

NOTE:— Functional description of this message to be included here

This message is used by UE to carry all subsequent higher layer messages after a signalling connection has been established.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE ->UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	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 session
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	

<h2 style="margin: 0;">CHANGE REQUEST</h2>		<i>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</i>
25.331	CR	306
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team
For submission to: TSG-RAN #8 <small>list expected approval meeting # here ↑</small>		Current Version: 3.2.0
for approval <input checked="" type="checkbox"/> for information <input type="checkbox"/>		strategic <input type="checkbox"/> non-strategic <input type="checkbox"/> <small>(for SMG use only)</small>

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 UTRAN / Radio Core Network
(at least one should be marked with an X)

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

Subject: Clarification of CTFC calculation

Work item: _____

Category:	F Correction <input checked="" type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
------------------	--	-----------------	--

(only one category shall be marked with an X)

Reason for change:

- As transport channel identifiers are assigned to dedicated, common and shared channels, the transport channel id values used for calculation of CTFC on a given TFCI may not be subsequent integers. The maximum value of CTFC can, with a maximum of 64 transport channels, get very large with no additional benefit for configuring a given TFCI.
- It is proposed that in the calculation of CTFC values subsequent integers starting from 1 in the order of transport channel identity values of transport channels mapped to the same TFCI are used.

Clauses affected: 14.8

Other specs affected:	Other 3G core specifications <input type="checkbox"/> Other GSM core specifications <input type="checkbox"/> MS test specifications <input type="checkbox"/> BSS test specifications <input type="checkbox"/> O&M specifications <input type="checkbox"/>	→ List of CRs: → List of CRs: → List of CRs: → List of CRs: → List of CRs:	
------------------------------	---	--	--

Other comments: _____

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

14.8 Calculated Transport Format Combination

The Calculated Transport Format Combination (CTFC) is a tool for efficient signalling of transport format combinations.

Let I be the number of transport channels that are included in the transport format combination. Each transport channel TrCH_i , $i = 1, 2, \dots, I$, has L_i transport formats, i.e. the transport format indicator TFI_i can take L_i values, $\text{TFI}_i \in \{0, 1, 2, \dots, L_i - 1\}$.

Define $P_i = \prod_{j=0}^{i-1} L_j$, where $i = 1, 2, \dots, I$, and $L_0 = 1$.

Let $\text{TFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I)$ be the transport format combination for which TrCH_1 has transport format TFI_1 , TrCH_2 has transport format TFI_2 , etc. The corresponding $\text{CTFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I)$ is then computed as:

$$\text{CTFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I) = \sum_{i=1}^I \text{TFI}_i \cdot P_i.$$

~~For dedicated CH, "I" in "TrCHi" is numbered from the smallest number of TrCH identity for DCH in an ascendant order.~~

For downlink common CH, "I" in "TrCHi" is numbered with ascending integer numbers starting from 1 in a listed order listed in a SYSTEM INFORMATION message.

In all other cases, for each separate TFCI field, "TrCHi" is numbered with ascending integer numbers starting from 1 in the ascending order of transport channel identities of the channels mapped to that TFCI field.

CHANGE REQUEST

25.331 CR 307r3

Current Version: 3.2.0

For submission to: TSG-RAN #8 for approval for information strategic non-strategic

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

Source: TSG-RAN WG2 **Date:** 23.5.2000

Subject: Compressed Mode Parameters

Work item:

Category:	F Correction <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/>
	A Corresponds to a correction in an earlier release <input type="checkbox"/>		Release 96 <input type="checkbox"/>
	B Addition of feature <input type="checkbox"/>		Release 97 <input type="checkbox"/>
	C Functional modification of feature <input checked="" type="checkbox"/>		Release 98 <input type="checkbox"/>
	D Editorial modification <input type="checkbox"/>		Release 99 <input checked="" type="checkbox"/>
			Release 00 <input type="checkbox"/>

Reason for change: This CR aims to align 25.331 with the 25.215. In addition, the maximum value of simultaneous compressed mode pattern sequences is set to 6 according to the measurement needs. The value of 6 is chosen according to the following scenario:

The following measurements that have different timing alignment requirements and therefore might need separate compressed mode pattern sequences can be required simultaneously:

- GSM RSSI measurements
- GSM cell search for synchronisation
- GSM cell synchronisation refreshing
- FDD inter-frequency measurements
- TDD measurements

With the addition of one pattern sequence reserved for the measurement purpose "other measurements". According to the measurement needs the number of simultaneous compressed mode patterns per measurement purpose is restricted to 1 except for GSM measurement purpose where 3 different kinds of measurement needs could be identified.

The scrambling code change is configured per radio link and therefore removed from the IE in this CR, which contains compressed mode parameters common for all radio links.

TGPS status flag is added to the DPCH compressed mode info to indicate whether the pattern is active or inactive.

The possibility to transmit only TGPS activation information is realised by changing the TGPS L1 configuration parameters to optional.

Clauses affected:

10.3.6.22

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:

10.3.6.22 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
<u>Transmission gap pattern sequence</u>		1 to <MaxTGP S>		
> TGPSI	MP		Integer(1..<MaxTGPS>)	Transmission Gap Pattern Sequence Identifier Establish a reference to the <u>compressed mode pattern sequence</u> . Up to <MaxTGPS> simultaneous compressed mode pattern sequences can be used.
>TGPS Status Flag	MP		Enumerated(<u>active, inactive</u>)	This flag indicates the current status of the <u>Transmission Gap Pattern Sequence</u> , whether it shall be <u>activated or deactivated</u> .
>Transmission gap pattern sequence configuration parameters	OP			
>> TGMP	MP		Enumerated(<u>TDD measurement, FDD measurement, GSM measurement, Other</u>)	Transmission Gap pattern sequence <u>Measurement Purpose</u> .
>> TGPRC	MP		Integer (1..63, Infinity)	The number of <u>transmission gap patterns</u> within the <u>Transmission Gap Pattern Sequence</u> .
>> TGCFN	MP		Integer (0..255)	<u>Connection Frame Number</u> of the first frame of the first pattern within the <u>Transmission Gap Pattern Sequence</u> .
>> TGSN	MP		Integer (0..14)	<u>Transmission Gap Starting Slot Number</u> The slot number of the first <u>transmission gap slot</u> within the <u>TGCFN</u> .

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>> TGL1	MP		Integer(1..145)	The length of the first Transmission Gap length 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.
CFN	MP		Integer(0..255)	Connection Frame Number when the first compressed frame starts
SN	MP		Integer(0..14)	Slot number when the transmission gap starts (within the CFN)
TGP1	MP		Integer(1..256)	The period of repetition of a set of consecutive frames containing up to 2 transmission gaps, for even gaps.
TGP2	MD		Integer(1..256)	For odd gaps. Default value is the value of TGP1
>> TGD	MP		Integer(0..3515..269, undefined)	Transmission gap distance indicates the number of frames slots between the starting slots of two consecutive transmission gaps within a transmission gap pattern period. If there is only one transmission gap in the transmission gap period 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.
PD	MP		Enumerated(1..35, infinity)	The pattern duration is the total time of the compressed mode pattern (all consecutive TGPs) expressed in number of frames.
>> RPPPCM	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
>> ITPPRM	MP		Enumerated (mode 0, mode 1).	Power resume mode-Initial Transmit Power is the uplink power control algorithm 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 DLMP		Enumerated (puncturing, SF/2, upper higher layer scheduling, none)	Method for generating downlink compressed mode gap None means that compressed mode pattern is stopped

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>> Uplink compressed mode method	CV UL		Enumerated (SF/2, none, higher layer scheduling)	Method for generating uplink compressed mode gap
Scrambling code change	CV SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.
>> Downlink frame type	MP		Enumerated (A, B)	
>> DeltaSIR	MP		Real(0..7.5 by step of 0.5)	Delta in DL SIR target value to be set in the UE during the compressed frames
>> DeltaSIRafter	MP		Real(0..7.5 by step of 0.5)	Delta in DL SIR target value to be set in the UE one frame after the compressed frames.

Range Bound	Explanation
<u>MaxTGPS</u>	Maximum number of transmission gap pattern sequences. Value 6.

Condition	Explanation
<u>SF/2</u>	The information element is mandatory if the value of the "Compressed mode method" IE is "SF/2", otherwise the IE is not needed.
<u>UL</u>	This information element is only sent when the value of the "UL/DL mode" IE is "UL only" or "UL/DL".
<u>DL</u>	This information element is only sent when the value of the "UL/DL mode" IE is "DL only" or "UL/DL".

11.3.6 Physical channel information elements

PhysicalChannel-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

```

    maxAddRLcount,
    maxAP-SigNum,
    maxAP-SubCH,
    maxChanCount,
    maxCodeCount,
    maxCodeNum,
    maxCodeNumComp-1,
    maxCombineSet,
    maxCPCH-SetCount,
    maxDelRLcount,
    maxDPDCHcount,
    maxFACH-Count,
    maxMidambleShift-1,
    maxNoCodeGroups,
    maxNoTFCI-Groups,
    maxPCPCHs,
    maxPDSCHcount,
    maxPRACHcount,
    maxPUSCHcount,
    maxReplaceCount,
    maxRLcount,
    maxSCCPCHcount,
    maxSigNum,
    maxSF-Num,
    maxSubChNum,
    maxTFCI-2-Combs,
    maxTFs,
    maxTGPS,
    maxTimeslotCount,
    maxTScout,
    maxUL-CCTrCHcount
FROM Constant-definitions

    ActivationTime
FROM UserEquipment-IEs

    CPCH-SetID,
    FACH-PCH-InformationList,
    TFCS,
    TFCS-Identity,
    TransportFormatSet
FROM TransportChannel-IEs

    SIB-ReferenceListFACH
FROM Other-IEs;

AC-To-ASC-Mapping ::= INTEGER (0..7)

AC-To-ASC-MappingTable ::= SEQUENCE (SIZE (7)) OF
    AC-To-ASC-Mapping

AccessServiceClass ::= SEQUENCE {
    availableSignatureStartIndex    INTEGER (0..15),
    availableSignatureEndIndex      INTEGER (0..15),
    availableSubChannelStartIndex   INTEGER (0..11),
    availableSubChannelEndIndex     INTEGER (0..11)
}

AccessServiceClassIndex ::= INTEGER (1..8)

AICH-Info ::= SEQUENCE {
    secondaryScramblingCode        SecondaryScramblingCode           OPTIONAL,
    channelisationCode256          ChannelisationCode256,
    sttd-Indicator                 STTD-Indicator,
    aich-TransmissionTiming        AICH-TransmissionTiming
}

AICH-PowerOffset ::= INTEGER (-10..5)

```

```

AICH-TransmissionTiming ::=      ENUMERATED {
                                   e0, e1 }

AllocationPeriodInfo ::=         SEQUENCE {
    allocationActivationTime      INTEGER (1..256),
    allocationDuration            INTEGER (1..256)
}

AP-AICH-ChannelisationCode ::=   INTEGER (0..255)

AP-AICH-ScramblingCode ::=       INTEGER (0..255)

AP-PreambleScramblingCode ::=    INTEGER (0..255)

AP-Signature ::=                 INTEGER (0..15)

AP-Subchannel ::=                INTEGER (0..11)

ASC ::=                           SEQUENCE {
    accessServiceClass            AccessServiceClass,
    repetitionPeriodAndOffset    ASC-RepetitionPeriodAndOffset    OPTIONAL
    -- TABULAR: The offset is nested in the repetition period
}

ASC-Info ::=                      SEQUENCE {
    asc-List                      ASC-List
}

ASC-List ::=                       SEQUENCE (SIZE (1..8)) OF
    ASC

ASC-RepetitionPeriodAndOffset ::= CHOICE {
    rp1                          NULL,
    rp2                          INTEGER (0..1),
    rp4                          INTEGER (0..3),
    rp8                          INTEGER (0..7)
}

AvailableAP-SignatureList ::=     SEQUENCE (SIZE (1..maxAP-SigNum)) OF
    AP-Signature

AvailableAP-SubchannelList ::=    SEQUENCE (SIZE (1..maxAP-SubCH)) OF
    AP-Subchannel

AvailableMinimumSF-VCAM ::=      SEQUENCE {
    minimumSpreadingFactor        MinimumSpreadingFactor,
    nf-Max                       NF-Max,
    maxAvailablePCPCH-Number      MaxAvailablePCPCH-Number,
    availableAP-SignatureList     AvailableAP-SignatureList,
    availableAP-SubchannelList    AvailableAP-SubchannelList    OPTIONAL
}

AvailableMinimumSF-ListUCSM ::=  SEQUENCE (SIZE (1..maxSF-Num)) OF
    MinimumSpreadingFactor

AvailableMinimumSF-ListVCAM ::=  SEQUENCE (SIZE (1..maxSF-Num)) OF
    AvailableMinimumSF-VCAM

AvailableSignatureList ::=       SEQUENCE (SIZE (1..maxSigNum)) OF
    Signature

AvailableSubChannelNumber ::=    INTEGER (0..11)

AvailableSubChannelNumberList ::= SEQUENCE (SIZE (1..maxSubChNum)) OF
    AvailableSubChannelNumber

BlockSTTD-Indicator ::=         BOOLEAN

BurstType ::=                    ENUMERATED {
    short1, long2 }

BurstType1 ::=                   ENUMERATED { ms4, ms8, ms16 }

BurstType2 ::=                   ENUMERATED { ms3, ms6 }

CCTrCH-PowerControlInfo ::=     SEQUENCE {
    tfcs-Identity                 TFCS-Identity                OPTIONAL,
    ul-DPCH-PowerControlInfo      UL-DPCH-PowerControlInfo
}

CD-AccessSlotSubchannel ::=      INTEGER (0..11)

```

```

CD-AccessSlotSubchannelList ::= SEQUENCE (SIZE (1..maxSubChNum)) OF
    CD-AccessSlotSubchannel

CD-CA-ICH-ChannelisationCode ::= INTEGER (0..255)

CD-CA-ICH-ScramblingCode ::= INTEGER (0..255)

CD-PreambleScramblingCode ::= INTEGER (0..255)

CD-SignatureCode ::= INTEGER (0..15)

CD-SignatureCodeList ::= SEQUENCE (SIZE (1..maxSigNum)) OF
    CD-SignatureCode

CellParametersID ::= INTEGER (0..127)

EFN ::= INTEGER (0..255)

ChannelAssignmentActive ::= CHOICE {
    notActive          NULL,
    isActive          VCAM-Info
}

ChannelisationCode256 ::= INTEGER (0..255)

ChannelReqParamsForUCSM ::= SEQUENCE {
    availableAP-SignatureList AvailableAP-SignatureList,
    availableAP-SubchannelList AvailableAP-SubchannelList
}

ChannelReqParamsForUCSM-List ::= SEQUENCE (SIZE (1..maxSigNum)) OF
    ChannelReqParamsForUCSM

ClosedLoopTimingAdjMode ::= ENUMERATED {
    slot1, slot2
}

CodeNumber ::= INTEGER (0..maxCodeNum)

CodeNumberDSCH ::= INTEGER (0..maxCodeNumComp-1)

CodeRange ::= SEQUENCE {
    pdsch-CodeMapList PDSCH-CodeMapList,
    codeNumberStart   CodeNumberDSCH,
    codeNumberStop    CodeNumberDSCH
}

CodeWordSet ::= ENUMERATED {
    longCWS,
    mediumCWS,
    shortCWS,
    ssdtOff
}

CommonTimeslotInfo ::= SEQUENCE {
    secondInterleavingMode SecondInterleavingMode OPTIONAL,
    tfci-Coding            TFCI-Coding          OPTIONAL,
    puncturingLimit       PuncturingLimit,
    repetitionPeriodAndLength RepetitionPeriodAndLength OPTIONAL
}

CommonTimeslotInfoSCCPCH ::= SEQUENCE {
    secondInterleavingMode SecondInterleavingMode OPTIONAL,
    tfci-Coding            TFCI-Coding          OPTIONAL,
    puncturingLimit       PuncturingLimit,
    repetitionPeriodLengthAndOffset RepetitionPeriodLengthAndOffset OPTIONAL
}

CompressedModeMethod ::= CHOICE {
    puncturing          NULL,
    sf 2                ScramblingCodeChange,
    upperLayerScheduling NULL,
    noCompressing      NULL
}


-- Values from -10 to 10 are used in Release 99
ConstantValue ::= INTEGER (-10..21)

CPCH-PersistenceLevelsList ::= SEQUENCE (SIZE (1..maxCPCH-SetCount)) OF
    CPCH-PersistenceLevels

CPCH-PersistenceLevels ::= SEQUENCE {

```

```

    cpch-SetID                CPCH-SetID,
    dynamicPersistenceLevelTF-List  DynamicPersistenceLevelTF-List
}

CPCH-SetInfo ::=
    cpch-SetID                CPCH-SetID,
    transportFormatSet        TransportFormatSet,
    ap-PreambleScramblingCode AP-PreambleScramblingCode,
    ap-AICH-ScramblingCode    AP-AICH-ScramblingCode,
    ap-AICH-ChannelisationCode AP-AICH-ChannelisationCode,
    cd-PreambleScramblingCode CD-PreambleScramblingCode,
    cd-CA-ICH-ScramblingCode  CD-CA-ICH-ScramblingCode,
    cd-CA-ICH-ChannelisationCode CD-CA-ICH-ChannelisationCode,
    cd-AccessSlotSubchannelList CD-AccessSlotSubchannelList OPTIONAL,
    cd-SignatureCodeList      CD-SignatureCodeList      OPTIONAL,
    slotFormat                SlotFormat,
    n-StartMessage            N-StartMessage,
    channelAssignmentActive    ChannelAssignmentActive,
    -- TABULAR: VCAM info has been nested inside ChannelAssignmentActive,
    -- which in turn is mandatory since it's only a binary choice.
    cpch-StatusIndicationMode CPCH-StatusIndicationMode,
    pcpch-ChannelInfoList     PCPCH-ChannelInfoList
}

CPCH-SetInfoList ::=
    SEQUENCE (SIZE (1..maxCPCH-SetCount)) OF
        CPCH-SetInfo

CPCH-StatusIndicationMode ::=
    ENUMERATED {
        pcpch-Availability,
        pcpch-AvailabilityAndMinAvailableSF }

-- Actual value = IE value * 512, only values from 0 to 599 used in Release 99.
DefaultDPCH-OffsetValue ::=
    INTEGER (0..1023)

-- Actual value = IE value * 0.5
DeltaSIR ::=
    INTEGER (0..15)

DL-CCTrCh ::=
    individualTS-InfoDL-CCTrCHList  IndividualTS-InfoDL-CCTrCHList
}

DL-CCTrCh-HO ::=
    tfcs-Identity                    TFCS-Identity,
    individualTS-InfoDL-CCTrCHList  IndividualTS-InfoDL-CCTrCHList
}

DL-CCTrChList ::=
    CHOICE {
        single
        handover
        DL-CCTrCh,
        SEQUENCE (SIZE (1..8)) OF
            DL-CCTrCh-HO
    }

DL-ChannelisationCode ::=
    secondaryScramblingCode          SecondaryScramblingCode      OPTIONAL,
    codeNumber                       CodeNumber
}

DL-ChannelisationCodeList ::=
    SEQUENCE (SIZE(1..maxChanCount)) OF
        DL-ChannelisationCode

DL-CommonInformation ::=
    dl-DPCH-InfoCommon              DL-DPCH-InfoCommon          OPTIONAL,
    modeSpecificInfo                CHOICE {
        fdd                          SEQUENCE {
            defaultDPCH-OffsetValue  DefaultDPCH-OffsetValue  OPTIONAL,
            dpch-CompressedModeInfo   DPCH-CompressedModeInfo  OPTIONAL,
            tx-DiversityMode          TX-DiversityMode        OPTIONAL,
            ssdt-Information          SSDT-Information        OPTIONAL
        },
        tdd                          SEQUENCE {
            ul-TimingAdvance          UL-TimingAdvance        OPTIONAL
        }
    }
}

DL-CommonInformationPredef ::=
    dl-DPCH-InfoCommon              DL-DPCH-InfoCommon          OPTIONAL,
    modeSpecificInfo                CHOICE {
        fdd                          SEQUENCE {
            defaultDPCH-OffsetValue  DefaultDPCH-OffsetValue  OPTIONAL
        },

```



```

    tdd                NULL
  }
}

DL-CompressedModeMethod ::= ENUMERATED {
  puncturing, sf-2,
  higherLayerScheduling }CHOICE {
  puncturing          NULL,
  sf-2                ScramblingCodeChange,
  higherLayerScheduling NULL,
  noCompressing       NULL
}

DL-DPCCH-SlotFormat ::= ENUMERATED {
  slf0, slf1 }

DL-DPCH-InfoCommon ::= SEQUENCE {
  dl-DPCH-PowerControlInfo DL-DPCH-PowerControlInfo,
  spreadingFactor          SF-DL-DPCH,
  -- TABULAR: The number of pilot bits is nested inside the spreading factor.
  positionFixedOrFlexible PositionFixedOrFlexible,
  tfci-Existence          BOOLEAN
}

DL-DPCH-InfoPerRL ::= CHOICE {
  fdd SEQUENCE {
    pCPICH-UsageForChannelEst PCPICH-UsageForChannelEst OPTIONAL,
    secondaryCPICH-Info       SecondaryCPICH-Info       OPTIONAL,
    dl-ChannelisationCodeList DL-ChannelisationCodeList,
    tpc-CombinationIndex      TPC-CombinationIndex,
    ssdt-CellIdentity          SSDT-CellIdentity          OPTIONAL,
    closedLoopTimingAdjMode    ClosedLoopTimingAdjMode    OPTIONAL
  },
  tdd SEQUENCE {
    dl-CCTrChList             DL-CCTrChList
  }
}

DL-DPCH-PowerControlInfo ::= SEQUENCE {
  modeSpecificInfo          CHOICE {
    fdd SEQUENCE {
      dpc-Mode                DPC-Mode                OPTIONAL
    },
    tdd                        NULL
  }
}

DL-FrameType ::= ENUMERATED {
  dl-FrameTypeA, dl-FrameTypeB }

DL-InfoPerRL ::= SEQUENCE {
  dl-InformationPerRL       DL-InformationPerRL-Short,
  dl-DPCH-InfoPerRL        DL-DPCH-InfoPerRL
}

DL-InfoPerRL-List ::= SEQUENCE (SIZE (1..maxRLcount)) OF
  DL-InfoPerRL

DL-InformationPerRL ::= SEQUENCE {
  modeSpecificInfo          CHOICE {
    fdd SEQUENCE {
      primaryCPICH-Info       PrimaryCPICH-Info,
      pdsch-SHO-DCH-Info      PDSCH-SHO-DCH-Info OPTIONAL,
      pdsch-CodeMapping        PDSCH-CodeMapping    OPTIONAL
    },
    tdd SEQUENCE {
      primaryCCPCH-Info       PrimaryCCPCH-Info
    }
  },
  dl-DPCH-InfoPerRL        DL-DPCH-InfoPerRL        OPTIONAL,
  secondaryCCPCH-Info      SecondaryCCPCH-Info      OPTIONAL,
  sib-ReferenceList        SIB-ReferenceListFACH    OPTIONAL
}

DL-InformationPerRL-List ::= SEQUENCE (SIZE (1..maxRLcount)) OF
  DL-InformationPerRL

DL-InformationPerRL-Short ::= SEQUENCE {
  modeSpecificInfo          CHOICE {
    fdd SEQUENCE {
      primaryCPICH-Info       PrimaryCPICH-Info
    }
  }
}

```

```

        },
        tdd
    },
    dl-DPCH-InfoPerRL
}
DL-OuterLoopControl ::= ENUMERATED {
    increaseAllowed, increaseNotAllowed }

DL-PDSCH-Information ::= SEQUENCE {
    pdsch-SHO-DCH-Info
    pdsch-CodeMapping
}

DL-TS-ChannelisationCode ::= ENUMERATED {
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

DL-TS-ChannelisationCodeList ::= SEQUENCE (SIZE (1..maxCodeCount)) OF
    DL-TS-ChannelisationCode

DPC-Mode ::= ENUMERATED {
    singleTPC,
    tpcTripletInSoft }

-- The actual value of DPCCH power offset is the value of this IE * 2.
DPCCH-PowerOffset ::= INTEGER (-82..-3)

DPCH-CompressedModeInfo ::= SEQUENCE {
    tgp-SequenceList TGP-SequenceList
    tgl TGL,
    efn CFN,
    sn Timeslot,
    tgp1 TGP,
    tgp2 TGP OPTIONAL,
    tgd TGD,
    pd PD,
    pem PCM,
    prm PRM,
    ul-DL-Mode UL-DL-Mode,
    compressedModeMethod CompressedModeMethod,
    -- TABULAR: Scrambling code change is nested inside CompressedModeMethod
    dl-FrameType DL-FrameType,
    deltaSIR DeltaSIR,
    deltaSIRAfter DeltaSIR
}

DPDCH-ChannelisationCode ::= ENUMERATED {
    e4, e8, e16, e32,
    e64, e128, e256 }

DPDCH-ChannelisationCodeList ::= SEQUENCE (SIZE (1..maxDPDCHcount)) OF
    DPDCH-ChannelisationCode

DSCH-Mapping ::= SEQUENCE {
    maxTFCI-Field2Value
    spreadingFactor
    codeNumber
    multiCodeInfo
}

DSCH-MappingList ::= SEQUENCE (SIZE (1..maxNoTFCI-Groups)) OF
    DSCH-Mapping

DSCH-RadioLinkIdentifier ::= INTEGER (0..511)

DurationTimeInfo ::= INTEGER (1..4096)

DynamicPersistenceLevel ::= INTEGER (1..8)

DynamicPersistenceLevelList ::= SEQUENCE (SIZE (1..maxPRACHcount)) OF
    DynamicPersistenceLevel

DynamicPersistenceLevelTF-List ::= SEQUENCE (SIZE (1..maxTFs)) OF
    DynamicPersistenceLevel

FACH-PCH-Information ::= SEQUENCE {
    transportFormatSet
    ctch-Indicator
}

```

```

}
FACH-PCH-InformationList ::= SEQUENCE (SIZE(1..maxFACH-Count)) OF
                              FACH-PCH-Information
FBI-BitNumber ::= INTEGER (1..2)
FrequencyInfo ::= SEQUENCE {
  modeSpecificInfo CHOICE {
    fdd SEQUENCE {
      uarfcn-UL UARFCN-Nu,
      uarfcn-DL UARFCN-Nd OPTIONAL
    },
    tdd SEQUENCE {
      uarfcn-Nt UARFCN-Nt
    }
  }
}
IndividualTimeslotInfo ::= SEQUENCE {
  timeslotNumber Timeslot,
  tfci-Existence BOOLEAN,
  -- The IE above is CH, but since it is a boolean it's kept mandatory.
  burstType BurstType,
  midambleShift MidambleShift
}
IndividualTS-InfoDL-CCTrCH ::= SEQUENCE {
  individualTimeslotInfo IndividualTimeslotInfo,
  dl-TS-ChannelisationCodeList DL-TS-ChannelisationCodeList
}
IndividualTS-InfoDL-CCTrCHList ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
  IndividualTS-InfoDL-CCTrCH
IndividualTS-InfoPDSCH ::= SEQUENCE {
  individualTimeslotInfo IndividualTimeslotInfo,
  pdsch-ChannelisationCode PDSCH-ChannelisationCode
}
IndividualTS-InfoPDSCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
  IndividualTS-InfoPDSCH
IndividualTS-InfoPUSCH ::= SEQUENCE {
  individualTimeslotInfo IndividualTimeslotInfo,
  pusch-ChannelisationCode PUSCH-ChannelisationCode
}
IndividualTS-InfoPUSCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
  IndividualTS-InfoPUSCH
IndividualTS-InfoUL-CCTrCH ::= SEQUENCE {
  individualTimeslotInfo IndividualTimeslotInfo,
  channelisationCode UL-TS-ChannelisationCode
}
IndividualTS-InfoUL-CCTrCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
  IndividualTS-InfoUL-CCTrCH
IndividualTS-Interference ::= SEQUENCE {
  timeslot Timeslot,
  ul-TimeslotInterference UL-Interference
}
IndividualTS-InterferenceList ::= SEQUENCE (SIZE (1..maxTScount)) OF
  IndividualTS-Interference
ITP ::= ENUMERATED {
  mode0, mode1 }
-- Value range of -50..33 is used for Release 99
MaxAllowedUL-TX-Power ::= INTEGER (-50..77)
MaxAvailablePCPCH-Number ::= INTEGER (1..64)
MaxTFCI-Field2Value ::= INTEGER (1..1023)
MidambleConfiguration ::= SEQUENCE {
  burstType1 BurstType1,
  burstType2 BurstType2
}

```

```

MidambleShift ::= INTEGER (0..maxMidambleShift-1)

MinimumSpreadingFactor ::= ENUMERATED {
    sf4, sf8, sf16, sf32,
    sf64, sf128, sf256 }

MultiCodeInfo ::= INTEGER (1..16)

N-GAP ::= ENUMERATED {
    f2, f4, f8 }

N-PCH ::= INTEGER (1..8)

N-StartMessage ::= INTEGER (1..8)

-- **TODO**, not defined yet
NB01Max ::= SEQUENCE {
}

-- **TODO**, not defined yet
NB01Min ::= SEQUENCE {
}

NF-Max ::= INTEGER (1..64)

NumberOfFBI-Bits ::= INTEGER (1..2)

PagingIndicatorLength ::= ENUMERATED {
    pi2, pi4, pi8 }

PC-Preamble ::= ENUMERATED {
    pcp0, pcp8 }

PC-PreambleSlotFormat ::= ENUMERATED {
    slf0, slf1 }

PCM ::= ENUMERATED {
    pc mode0, pc mode1 }

PCP-Length ::= ENUMERATED {
    as0, as8 }

PCPCH-ChannelInfo ::= SEQUENCE {
    pcpch-UL-ScramblingCode INTEGER (0..255),
    pcpch-DL-ChannelisationCode INTEGER (0..511),
    pcpch-DL-ScramblingCode INTEGER (0..255),
    pcp-Length PCP-Length,
    ucsM-Info UCSM-Info OPTIONAL
}

PCPCH-ChannelInfoList ::= SEQUENCE (SIZE (1..maxPCPCHs)) OF
    PCPCH-ChannelInfo

PCPICH-UsageForChannelEst ::= ENUMERATED {
    maybeUsed,
    shallNotBeUsed }

Here the value 0 represents "infinity" in the tabular notation.
PD ::= INTEGER (0..35)

PDSCH-ChannelisationCode ::= ENUMERATED {
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

PDSCH-CodeInfo ::= SEQUENCE {
    spreadingFactor SF-PDSCH,
    codeNumber CodeNumberDSCH,
    multiCodeInfo MultiCodeInfo
}

PDSCH-CodeInfoList ::= SEQUENCE (SIZE (1..maxTFCI-2-Combs)) OF
    PDSCH-CodeInfo

PDSCH-CodeMap ::= SEQUENCE {
    spreadingFactor SF-PDSCH,
    multiCodeInfo MultiCodeInfo
}

```

PDSCH-CodeMapList ::=	SEQUENCE (SIZE (1..maxNoCodeGroups)) OF PDSCH-CodeMap	
PDSCH-CodeMapping ::=	SEQUENCE { SecondaryScramblingCode, CHOICE { CodeRange, DSCH-MappingList, PDSCH-CodeInfoList, ReplacedPDSCH-CodeInfoList } } }	
PDSCH-Info ::=	SEQUENCE { TFCS-Identity TimeInfo, CommonTimeslotInfo IndividualTS-InfoPDSCH-List	OPTIONAL, OPTIONAL, OPTIONAL
PDSCH-SHO-DCH-Info ::=	SEQUENCE { DSCH-RadioLinkIdentifier, TFCI-CombiningSet, RL-IdentifierList	OPTIONAL
PDSCH-SysInfo ::=	SEQUENCE { PDSCH-Info, TransportFormatSet	OPTIONAL
PDSCH-SysInfoList ::=	SEQUENCE (SIZE (1..maxPDSCHcount)) OF PDSCH-SysInfo	
PersistenceScalingFactor ::=	ENUMERATED { psf0-9, psf0-8, psf0-7, psf0-6, psf0-5, psf0-4, psf0-3, psf0-2 }	
PersistenceScalingFactorList ::=	SEQUENCE (SIZE (1..6)) OF PersistenceScalingFactor	
PI-CountPerFrame ::=	ENUMERATED { e18, e36, e72, e144 }	
PICH-Info ::=	CHOICE { fdd SEQUENCE { SecondaryScramblingCode ChannelisationCode256, PI-CountPerFrame, STTD-Indicator }, tdd SEQUENCE { TDD-PICH-CCode Timeslot BurstType, MidambleShift RepPerLengthOffset-PICH PagingIndicatorLength N-GAP N-PCH	OPTIONAL, OPTIONAL, OPTIONAL, OPTIONAL, OPTIONAL, OPTIONAL, OPTIONAL
PICH-PowerOffset ::=	INTEGER (-10..5)	
PilotBits128 ::=	ENUMERATED { pb4, pb8 }	
PilotBits256 ::=	ENUMERATED { pb2, pb4, pb8 }	
PositionFixedOrFlexible ::=	ENUMERATED { fixed, flexible }	
PowerControlAlgorithm ::=	CHOICE { TPC-StepSize, NULL algorithm1 algorithm2 }	
PowerOffsetP0 ::=	INTEGER (1..8)	

```

PRACH-Midamble ::=                               ENUMERATED {
                                                direct,
                                                direct-Inverted }

PRACH-Partitioning ::=                          SEQUENCE (SIZE (1..8)) OF
                                                AccessServiceClass

PRACH-PowerOffset ::=                          SEQUENCE {
    powerOffsetP0                               PowerOffsetP0,
    preambleRetransMax                         PreambleRetransMax
}

PRACH-RACH-Info ::=                            SEQUENCE {
    modeSpecificInfo                           CHOICE {
        fdd                                     SEQUENCE {
            availableSignatureList             AvailableSignatureList,
            availableSF                        SF-PRACH,
            scramblingCodeWordNumber          ScramblingCodeWordNumber,
            puncturingLimit                   PuncturingLimit,
            availableSubChannelNumberList      AvailableSubChannelNumberList
        },
        tdd                                     SEQUENCE {
            timeslot                           Timeslot,
            channelisationCode                TDD-PRACH-CCode,
            prach-Midamble                     PRACH-Midamble
        }
    }
}

PRACH-SystemInformation ::=                   SEQUENCE {
    prach-RACH-Info                            PRACH-RACH-Info,
    rach-TransportFormatSet                    TransportFormatSet,
    rach-TFCS                                   TFCS,
    modeSpecificInfo                           CHOICE {
        fdd                                     SEQUENCE {
            prach-Partitioning                PRACH-Partitioning,
            persistenceScalingFactorList       PersistenceScalingFactorList
        },
        tdd                                     SEQUENCE {
            ac-To-ASC-MappingTable             AC-To-ASC-MappingTable
            primaryCPICH-TX-Power              PrimaryCPICH-TX-Power,
            constantValue                      ConstantValue,
            prach-PowerOffset                  PRACH-PowerOffset,
            rach-TransmissionParameters        RACH-TransmissionParameters,
            aich-Info                          AICH-Info
        },
        asc-Info                               ASC-Info
    }
}

PRACH-SystemInformationList ::=              SEQUENCE (SIZE (1..maxPRACHcount)) OF
                                                PRACH-SystemInformation

PreambleRetransMax ::=                       INTEGER (1..64)

-- **TODO**, tabular definition a little unclear
PreDefPhyChConfiguration ::=                SEQUENCE {
    ul-DPCH-InfoPredef                         UL-DPCH-InfoPredef,
    dl-CommonInformationPredef                 DL-CommonInformationPredef
}

PrimaryCCPCH-Info ::=                       CHOICE {
    fdd                                         SEQUENCE {
        tx-DiversityIndicator                 BOOLEAN
    },
    tdd                                         SEQUENCE {
        timeslot                               Timeslot
        cellParametersID                      CellParametersID
        syncCase                               SyncCase
        repetitionPeriodLengthAndOffset       RepetitionPeriodLengthAndOffset
    }
    OPTIONAL,
    blockSTTD-Indicator                       BlockSTTD-Indicator
}

PrimaryCCPCH-InfoSI ::=                     CHOICE {
    fdd                                         SEQUENCE {
        tx-DiversityIndicator                 BOOLEAN
    },
}

```

```

tdd
    repetitionPeriodLengthAndOffset SEQUENCE {
    blockSTTD-Indicator              RepetitionPeriodLengthAndOffset OPTIONAL,
                                   BlockSTTD-Indicator              OPTIONAL
    }
}

PrimaryCCPCH-TX-Power ::=          INTEGER (6..43)

PrimaryCPICH-Info ::=              SEQUENCE {
    primaryScramblingCode           PrimaryScramblingCode
}

-- Value range -10 .. 50 used for Release 99
PrimaryCPICH-TX-Power ::=          INTEGER (-10..53)

PrimaryScramblingCode ::=          INTEGER (0..511)

PRM ::= ENUMERATED {
pr mode0, pr mode1 }

PuncturingLimit ::=               ENUMERATED {
    p10-40, p10-44, p10-48, p10-52, p10-56,
    p10-60, p10-64, p10-68, p10-72, p10-76,
    p10-80, p10-84, p10-88, p10-92, p10-96, p11 }

PUSCH-AllocationAssignment ::=     SEQUENCE {
    pusch-PowerControlInfo          PUSCH-PowerControlInfo          OPTIONAL,
    timeInfo                        TimeInfo,
    commonTimeslotInfo              CommonTimeslotInfo          OPTIONAL,
    timeslotInfoList                IndividualTS-InfoPUSCH-List      OPTIONAL
}

PUSCH-ChannelisationCode ::=       ENUMERATED {
    cc1-1, cc2-1, cc2-2,
    cc4-1, cc4-2, cc4-3, cc4-4,
    cc8-1, cc8-2, cc8-3, cc8-4,
    cc8-5, cc8-6, cc8-7, cc8-8,
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

PUSCH-Info ::=                    SEQUENCE {
    pusch-Allocation                CHOICE {
    pusch-AllocationPending          NULL,
    pusch-AllocationAssignment      PUSCH-AllocationAssignment
    }
}

PUSCH-PowerControlInfo ::=        SEQUENCE {
    ul-TargetSIR                    UL-TargetSIR
}

PUSCH-SysInfo ::=                 SEQUENCE {
    pusch-Info                      PUSCH-Info,
    usch-TFS                         TransportFormatSet          OPTIONAL
}

PUSCH-SysInfoList ::=             SEQUENCE (SIZE (1..maxPUSCHcount)) OF
    PUSCH-SysInfo

RACH-TransmissionParameters ::=    SEQUENCE {
    mmax                             INTEGER (1..32),
    nb0lMin                          NB0lMin,
    nb0lMax                          NB0lMax
}

ReducedScramblingCodeNumber ::=    INTEGER (0..8191)

RepetitionPeriodAndLength ::=      CHOICE {
    repetitionPeriod1                NULL,
    repetitionPeriod2                INTEGER (1..1),
    -- repetitionPeriod2 could just as well be NULL also.
    repetitionPeriod4                INTEGER (1..3),
    repetitionPeriod8                INTEGER (1..7),
    repetitionPeriod16               INTEGER (1..15),
    repetitionPeriod32               INTEGER (1..31),
    repetitionPeriod64               INTEGER (1..63)
}

RepetitionPeriodLengthAndOffset ::= CHOICE {

```

```

repetitionPeriod1          NULL,
repetitionPeriod2          SEQUENCE {
    length                  NULL,
    offset                  INTEGER (0..1)
},
repetitionPeriod4          SEQUENCE {
    length                  INTEGER (1..3),
    offset                  INTEGER (0..3)
},
repetitionPeriod8          SEQUENCE {
    length                  INTEGER (1..7),
    offset                  INTEGER (0..7)
},
repetitionPeriod16         SEQUENCE {
    length                  INTEGER (1..15),
    offset                  INTEGER (0..15)
},
repetitionPeriod32         SEQUENCE {
    length                  INTEGER (1..31),
    offset                  INTEGER (0..31)
},
repetitionPeriod64         SEQUENCE {
    length                  INTEGER (1..63),
    offset                  INTEGER (0..63)
}
}

ReplacedPDSCH-CodeInfo ::= SEQUENCE {
    tfci-Field2             MaxTFCI-Field2Value,
    spreadingFactor         SF-PDSCH,
    codeNumber              CodeNumberDSCH,
    multiCodeInfo           MultiCodeInfo
}

ReplacedPDSCH-CodeInfoList ::= SEQUENCE (SIZE (1..maxReplaceCount)) OF
    ReplacedPDSCH-CodeInfo

RepPerLengthOffset-PICH ::= CHOICE {
    rpp4-2                  INTEGER (0..3),
    rpp8-2                  INTEGER (0..7),
    rpp8-4                  INTEGER (0..7),
    rpp16-2                 INTEGER (0..15),
    rpp16-4                 INTEGER (0..15),
    rpp32-2                 INTEGER (0..31),
    rpp32-4                 INTEGER (0..31),
    rpp64-2                 INTEGER (0..63),
    rpp64-4                 INTEGER (0..63)
}

RL-AdditionInformation ::= SEQUENCE {
    primaryCPICH-Info       PrimaryCPICH-Info,
    dl-DPCH-InfoPerRL      DL-DPCH-InfoPerRL,
    tfci-CombiningIndicator BOOLEAN,
    secondaryCCPCH-Info     SecondaryCCPCH-Info OPTIONAL,
    sib-ReferenceListFACH    SIB-ReferenceListFACH OPTIONAL
}

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

RL-IdentifierList ::= SEQUENCE (SIZE(1..maxCombineSet)) OF
    PrimaryCPICH-Info

RL-RemovalInformation ::= SEQUENCE {
    primaryCPICH-Info       PrimaryCPICH-Info
}

RL-RemovalInformationList ::= SEQUENCE (SIZE (1..maxDelRLcount)) OF
    RL-RemovalInformation

RPP ::= ENUMERATED {
    mode0, mode1 }

S-Field ::= ENUMERATED {
    e1bit, e2bits }

SCCPCH-ChannelisationCode ::= ENUMERATED {
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

```



```

SCCPCH-SystemInformation ::= SEQUENCE {
    secondaryCCPCH-Info      SecondaryCCPCH-Info,
    tfcs                     TFCS,
    fach-PCH-InformationList FACH-PCH-InformationList,
    pich-Info                PICH-Info
}
                                                                    OPTIONAL

SCCPCH-SystemInformationList ::= SEQUENCE (SIZE (1..maxSCCPCHcount)) OF
    SCPCH-SystemInformation

ScramblingCodeChange ::= ENUMERATED {
    codeChange, noCodeChange }

ScramblingCodeType ::= ENUMERATED {
    shortSC,
    longSC }

ScramblingCodeWordNumber ::= INTEGER (0..15)

SecondaryCCPCH-Info ::= SEQUENCE {
    selectionIndicator      SelectionIndicator
                                                                    OPTIONAL,
    -- The IE above is conditional on the logical channel type.
    modeSpecificInfo       CHOICE {
        fdd                 SEQUENCE {
            pCPICH-UsageForChannelEst  PCPICH-UsageForChannelEst,
            secondaryCPICH-Info        SecondaryCPICH-Info
                                                                    OPTIONAL,
            secondaryScramblingCode    SecondaryScramblingCode
                                                                    OPTIONAL,
            sttd-Indicator             STTD-Indicator,
            sf-AndCodeNumber          SF-AndCodeNumber,
            pilotSymbolExistence      BOOLEAN,
            tfci-Existence            BOOLEAN,
            positionFixedOrFlexible    PositionFixedOrFlexible,
            timingOffset              TimingOffset
                                                                    OPTIONAL
        },
        tdd                 SEQUENCE {
            -- TABULAR: the offset is included in CommonTimeslotInfoSCCPCH
            commonTimeslotInfo        CommonTimeslotInfoSCCPCH
                                                                    OPTIONAL,
            individualTimeslotInfo    IndividualTimeslotInfo,
            channelisationCode        SCCPCH-ChannelisationCode
        }
    }
}

SecondaryCPICH-Info ::= SEQUENCE {
    secondaryDL-ScramblingCode  SecondaryScramblingCode
                                                                    OPTIONAL,
    channelisationCode          ChannelisationCode256
}

-- Value range 1..15 used for Release 99
SecondaryScramblingCode ::= INTEGER (1..16)

SecondInterleavingMode ::= ENUMERATED {
    frameRelated, timeslotRelated }

SelectionIndicator ::= ENUMERATED {
    on, off }

SF-AndCodeNumber ::= CHOICE {
    sf4          INTEGER (0..3),
    sf8          INTEGER (0..7),
    sf16         INTEGER (0..15),
    sf32         INTEGER (0..31),
    sf64         INTEGER (0..63),
    sf128        INTEGER (0..127),
    sf256        INTEGER (0..255)
}

SF-DL-DPCH ::= CHOICE {
    sfd4          NULL,
    sfd8          NULL,
    sfd16         NULL,
    sfd32         NULL,
    sfd64         NULL,
    sfd128        PilotBits128,
    sfd256        PilotBits256,
    sfd512        NULL
}

SF-PDSCH ::= ENUMERATED {
    sfp4, sfp8, sfp16, sfp32,

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```

        sfp64, sfp128, sfp256, spare }

SF-PRACH ::=
    ENUMERATED {
        sfpr32, sfpr64, sfpr128, sfpr256 }

Signature ::=
    INTEGER (0..15)

SlotFormat ::=
    SEQUENCE {
        pc-PreambleSlotFormat
        ul-DPCCH-SlotFormat
        dl-DPCCH-SlotFormat
    }

SSDT-CellIdentity ::=
    ENUMERATED {
        ssdt-id-a, ssdt-id-b, ssdt-id-c,
        ssdt-id-d, ssdt-id-e, ssdt-id-f,
        ssdt-id-g, ssdt-id-h }

SSDT-Information ::=
    SEQUENCE {
        s-Field
        codeWordSet
    }

STTD-Indicator ::=
    BOOLEAN

SyncCase ::=
    ENUMERATED {
        sc1, sc2 }

TDD-PICH-CCode ::=
    ENUMERATED {
        cc16-1, cc16-2, cc16-3, cc16-4,
        cc16-5, cc16-6, cc16-7, cc16-8,
        cc16-9, cc16-10, cc16-11, cc16-12,
        cc16-13, cc16-14, cc16-15, cc16-16 }

TDD-PRACH-CCode ::=
    ENUMERATED {
        cc8-1, cc8-2, cc8-3, cc8-4,
        cc8-5, cc8-6, cc8-7, cc8-8,
        cc16-1, cc16-2, cc16-3, cc16-4,
        cc16-5, cc16-6, cc16-7, cc16-8,
        cc16-9, cc16-10, cc16-11, cc16-12,
        cc16-13, cc16-14, cc16-15, cc16-16 }

TFC-ControlDuration ::=
    ENUMERATED {
        tfc-cd1, tfc-cd16, tfc-cd24, tfc-cd32,
        tfc-cd48, tfc-cd64, tfc-cd128,
        tfc-cd192, tfc-cd256, tfc-cd512 }

TFCI-Coding ::=
    ENUMERATED {
        tfci-bits-4, tfci-bits-8,
        tfci-bits-16, tfci-bits-32 }

-- **TODO**, not defined
TFCI-CombiningSet ::=
    SEQUENCE {
}

TGCFN ::=
    INTEGER (0..255)

-- The value 270 represents "undefined" in the tabular description.
TGD ::=
    INTEGER (150..35270)

TGL ::=
    INTEGER (1..145)

TGMP ::=
    ENUMERATED {
        tdd-Measurement, fdd-Measurement,
        gsm-Measurement, otherMP }

TGP ::=
    INTEGER (1..256)
TGP-Sequence ::=
    SEQUENCE {
        tgpsi
        tgps-StatusFlag
        tgps-ConfigurationParams
        tgmp
        tgprc
        tgefn
        tgsn
        tgl1
        tgl2
        tgd
        tgpl1
        tgpl2
        rpp
    }
    TGPSI,
    TGPS-StatusFlag,
    TGPS-ConfigurationParams
    TGMP,
    TGPRC,
    TGCFN,
    TGSN,
    TGL,
    TGL,
    TGL,
    TGD,
    TGPL,
    TGPL,
    RPP,
    OPTIONAL,
    OPTIONAL,
    OPTIONAL,

```

```

itp ITP,
ul-DL-Mode UL-DL-Mode,
-- TABULAR: Compressed mode method is nested inside UL-DL-Mode, and scrambling code
-- change is nested inside CompressedModeMethod in both DL and UL.
dl-FrameType DL-FrameType,
deltaSIR DeltaSIR,
deltaSIRAfter DeltaSIR
}

TGP-SequenceList ::= SEQUENCE (SIZE (1..maxTGPS)) OF
TGP-Sequence

TGPL ::= INTEGER (1..144)

-- TABULAR: The value 0 represents "infinity" in the tabular description.
TGPRC ::= INTEGER (0..63)

TGPS-ConfigurationParams ::= SEQUENCE {
  tgmp TGMP,
  tgprc TGPRC,
  tgcfn TGCFN,
  tgsn TGSN,
  tgl1 TGL,
  tgl2 TGL OPTIONAL,
  tgd TGD,
  tgpl1 TGPL,
  tgpl2 TGPL OPTIONAL,
  rpp RPP,
  itp ITP,
  ul-DL-Mode UL-DL-Mode,
  -- TABULAR: Compressed mode method is nested inside UL-DL-Mode
  dl-FrameType DL-FrameType,
  deltaSIR DeltaSIR,
  deltaSIRAfter DeltaSIR
}

TGPS-StatusFlag ::= ENUMERATED {
  tgpsActive, tgpsInactive }

TGPSI ::= INTEGER (1..maxTGPS)

TGSN ::= INTEGER (0..14)

TimeInfo ::= SEQUENCE {
  activationTime ActivationTime OPTIONAL,
  duration DurationTimeInfo OPTIONAL
}

Timeslot ::= INTEGER (0..14)

TimeslotList ::= SEQUENCE (SIZE (1..14)) OF
Timeslot

-- Actual value = IE value * 256
TimingOffset ::= INTEGER (0..149)

TPC-CombinationIndex ::= INTEGER (0..5)

TPC-StepSize ::= ENUMERATED {
  dB1, dB2 }

TX-DiversityMode ::= ENUMERATED {
  noDiversity,
  sttd,
  closedLoopMode1,
  closedLoopMode2 }

UARFCN-Nd ::= INTEGER (0..16383)

UARFCN-Nt ::= INTEGER (0..16383)

UARFCN-Nu ::= INTEGER (0..16383)

UCSM-Info ::= SEQUENCE {
  availableMinimumSF-ListUCSM AvailableMinimumSF-ListUCSM,
  nf-Max NF-Max,
  channelReqParamsForUCSM-List ChannelReqParamsForUCSM-List OPTIONAL
}

UL-CCTrCH ::= SEQUENCE {
  tfcs-Identity TFCS-Identity OPTIONAL,

```

```

timeInfo                TimeInfo,
commonTimeslotInfo      CommonTimeslotInfo                OPTIONAL,
timeslotInfoList        IndividualTS-InfoUL-CCTrCH-List    OPTIONAL
}

UL-CCTrCHList ::=      SEQUENCE (SIZE (1..maxUL-CCTrCHcount)) OF
                        UL-CCTrCH

UL-ChannelRequirement ::= CHOICE {
    ul-DPCH-Info        UL-DPCH-Info,
    prach-RACH-Info     PRACH-RACH-Info,
    spare               NULL
}

UL-CompressedModeMethod ::= ENUMERATED {
sf-2, noCompressing,
higherLayerScheduling } CHOICE {
sf-2           ScramblingCodeChange,
higherLayerScheduling  NULL,
noCompressing      NULL
}

UL-DL-Mode ::=          ENUMERATED-CHOICE {
ul             UL-CompressedModeMethod,
dl             DL-CompressedModeMethod
dl-Only, ul-DL
}

UL-DPCCH-SlotFormat ::= ENUMERATED {
    slf0, slf1, slf2, slf3, slf4, slf5 }

UL-DPCH-Info ::=       SEQUENCE {
    ul-DPCH-PowerControlInfo  UL-DPCH-PowerControlInfo    OPTIONAL,
    modeSpecificInfo          CHOICE {
        fdd                   SEQUENCE {
            scramblingCodeType ScramblingCodeType,
            scramblingCode      UL-ScramblingCode,
            dpdch-ChannelisationCodeList  DPDCH-ChannelisationCodeList,
            tfci-Existence     BOOLEAN,
            fbi-BitNumber       FBI-BitNumber,
            puncturingLimit     PuncturingLimit
        },
        tdd                   SEQUENCE {
            ul-CCTrCHList      UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoHO ::=     SEQUENCE {
    ul-DPCH-PowerControlInfoHO  UL-DPCH-PowerControlInfoHO    OPTIONAL,
    modeSpecificInfo            CHOICE {
        fdd                   SEQUENCE {
            scramblingCodeType ScramblingCodeType,
            scramblingCode      UL-ScramblingCode,
            dpdch-ChannelisationCodeList  DPDCH-ChannelisationCodeList,
            tfci-Existence     BOOLEAN,
            fbi-BitNumber       FBI-BitNumber,
            puncturingLimit     PuncturingLimit
        },
        tdd                   SEQUENCE {
            ul-CCTrCHList      UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoPredef ::= SEQUENCE {
    ul-DPCH-PowerControlInfo      UL-DPCH-PowerControlInfo,
    modeSpecificInfo              CHOICE {
        fdd                   SEQUENCE {
            maxAllowedUL-TX-Power  MaxAllowedUL-TX-Power    OPTIONAL,
            pc-Preamble            PC-Preamble                OPTIONAL,
            tfci-Existence         BOOLEAN,
            puncturingLimit        PuncturingLimit
        },
        tdd                   NULL
    }
}

UL-DPCH-InfoShort ::=  SEQUENCE {
    ul-DPCH-PowerControlInfoShort  UL-DPCH-PowerControlInfoShort,
    modeSpecificInfo              CHOICE {
        fdd                   SEQUENCE {

```

```

        scramblingCodeType          ScramblingCodeType,
        reducedScramblingCodeNumber ReducedScramblingCodeNumber,
        dpdch-ChannelisationCode    DPDCH-ChannelisationCode,
        numberOfFBI-Bits            NumberOfFBI-Bits
        -- The IE above is CH, which is questionable as such.
        -- There's no point in making a 1-bit integer optional, however.
    },
    tdd                               NULL
}
}
}

UL-DPCH-PowerControlInfo ::= CHOICE {
    fdd                               SEQUENCE {
        dpcch-PowerOffset            DPCCH-PowerOffset,
        pc-Preamble                  PC-Preamble,
        powerControlAlgorithm        PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                               SEQUENCE {
        maxAllowedUL-TX-Power        MaxAllowedUL-TX-Power           OPTIONAL,
        ul-TargetSIR                 UL-TargetSIR,
        handoverGroup                SEQUENCE {
            individualTS-InterferenceList IndividualTS-InterferenceList,
            dpch-ConstantValue        ConstantValue
        }
    }
}

UL-DPCH-PowerControlInfoHO ::= CHOICE {
    fdd                               SEQUENCE {
        dpcch-PowerOffset            DPCCH-PowerOffset,
        powerControlAlgorithm        PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                               SEQUENCE {
        maxAllowedUL-TX-Power        MaxAllowedUL-TX-Power           OPTIONAL,
        ul-TargetSIR                 UL-TargetSIR,
        handoverGroup                SEQUENCE {
            individualTS-InterferenceList IndividualTS-InterferenceList,
            dpch-ConstantValue        ConstantValue
        }
    }
}

UL-DPCH-PowerControlInfoShort ::= SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                          SEQUENCE {
            dpcch-PowerOffset        DPCCH-PowerOffset,
            powerControlAlgorithm    PowerControlAlgorithm
        },
        tdd                          NULL
    }
}

-- Value range -110 .. -70 used for Release 99
UL-Interference ::= INTEGER (-110..-47)

-- **TODO**, specification possibly wrong. 777215 mod 16 <> 0...
UL-ScramblingCode ::= INTEGER (0..48575)

-- Actual value = (IE value * 0.5) - 11
UL-TargetSIR ::= INTEGER (0..62)

UL-TimingAdvance ::= INTEGER (0..63)

UL-TS-ChannelisationCode ::= ENUMERATED {
    cc1-1, cc2-1, cc2-2,
    cc4-1, cc4-2, cc4-3, cc4-4,
    cc8-1, cc8-2, cc8-3, cc8-4,
    cc8-5, cc8-6, cc8-7, cc8-8,
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

VCAM-Info ::= SEQUENCE {
    availableMinimumSF-List        AvailableMinimumSF-ListVCAM
}

END

```

11.4 Constant definitions

| maxTGPS INTEGER ::= 6

3GPP TSG-RAN WG2 Meeting #13
Oahu, HI, USA, 22–26 May 2000

Document R2-001209

*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	309r2	Current Version: 3.2.0	
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team		
For submission to: TSG-RAN #8	for approval <input checked="" type="checkbox"/>	strategic <input type="checkbox"/>	non-strategic <input type="checkbox"/>	(for SMG use only)
list expected approval meeting # here ↑	for information <input type="checkbox"/>			

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 UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 24 May 2000

Subject: Signalling procedure for periodic local authentication

Work item: _____

Category:	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input checked="" type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
------------------	--	-----------------	--

(only one category shall be marked with an X)

Reason for change: It is proposed to add a new "Counter Check" signalling procedure for periodic local authentication. The request for this new functionality comes from TS 33.102.

Protocol error handling has been added to the procedure.

For further details of this procedure please refer to Tdoc R2-000776.

Clauses affected: 8.1.14 (new), 10.2.63 (new), 10.2.64 (new), 10.3.4.21 (new), 10.3.4.22 (new)

Other specs affected:	Other 3G core specifications <input type="checkbox"/> → List of CRs: Other GSM core specifications <input type="checkbox"/> → List of CRs: MS test specifications <input type="checkbox"/> → List of CRs: BSS test specifications <input type="checkbox"/> → List of CRs: O&M specifications <input type="checkbox"/> → List of CRs:	
------------------------------	--	--

Other comments: _____



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

8.1.14 Counter check

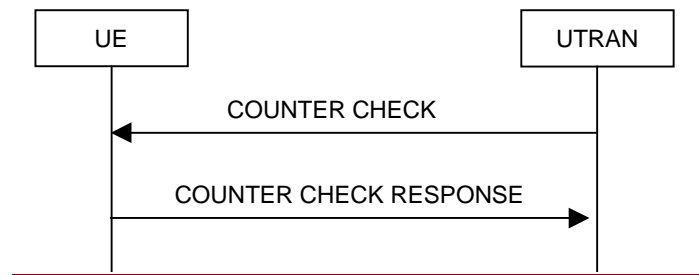


Figure xx: Counter check procedure

8.1.14.1 General

The counter check procedure is used by the UTRAN to perform a local authentication. The purpose of the procedure is to check that the amount of data sent in both directions (uplink/downlink) during the RRC connection is the same at the UTRAN and at the UE (to prevent a possible intruder – a 'man-in-the-middle' – to operate). It should be noted that this requires that the COUNT-C values for each radio bearer are maintained even if ciphering is not used. This procedure is only applicable to radio bearers using UM or AM mode of RLC. Applying this procedure for radio bearers using transparent mode RLC is FFS.

8.1.14.2 Initiation

The UTRAN is monitoring the COUNT-C value associated to each radio bearer using UM or AM RLC. The procedure is triggered whenever any of these values reaches a critical checking value. The granularity of these checking values and the values themselves are defined to the UTRAN by the visited network. The UTRAN initiates the procedure by sending a COUNTER CHECK message on the downlink DCCH.

8.1.14.3 Timer expiry at UTRAN

If a timer started at UTRAN when sending the COUNTER CHECK message expires before a response from the UE is received, the UTRAN should release the RRC connection.

8.1.14.4 Reception of a COUNTER CHECK message by the UE

When the UE receives a COUNTER CHECK message it shall compare the COUNT-C MSB values received in the COUNTER CHECK message to the COUNT-C MSB values of the corresponding radio bearers.

If the number of radio bearers using UM or AM RLC mode or any of the COUNT-C MSB values is different the mismatching COUNT-C values shall be included in a COUNTER CHECK RESPONSE message.

The UE shall send the COUNTER CHECK RESPONSE message on the uplink DCCH.

8.1.14.5 Reception of the COUNTER CHECK RESPONSE message by UTRAN

If the UTRAN receives a COUNTER CHECK RESPONSE message that does not contain any COUNT-C values, the procedure ends.

If the UTRAN receives a COUNTER CHECK RESPONSE message that contains one or several COUNT-C values, it should compare the COUNT-C values in the message to the COUNT-C values which were used in forming the COUNTER CHECK message.

If there is no difference or if the difference is acceptable, the procedure ends. The limits for an acceptable difference are defined to the UTRAN by the visited network.

If there is a difference that is not acceptable, UTRAN should initiate the release of the RRC connection.

8.1.14.7 Invalid COUNTER CHECK message

If the UE receives a COUNTER CHECK 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 and include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the RRC STATUS message has been confirmed by RLC, the UE shall resume normal operation as if the invalid COUNTER CHECK message has not been received.

10.2.63 COUNTER CHECK

This message is used by the UTRAN to indicate the current COUNT-C MSB values associated to each radio bearer utilizing UM or AM RLC mode and to request the UE to compare these to its COUNT-C MSB values and to report the comparison results to UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

<u>Information Element</u>	<u>Presence</u>	<u>Multi</u>	<u>IE type and reference</u>	<u>Semantics description</u>
<u>Message Type</u>	<u>MP</u>			
<u>UE information elements</u>				
<u>Integrity check info</u>	<u>MP</u>		Integrity check info 10.3.3.16	
<u>RB information elements</u>				
<u>RB COUNT-C MSB information</u>	<u>MP</u>	1 to < <u>maxRBallR</u> ABs >		<u>For each RB (excl SRBs) using UM or AM RLC.</u>
<u>>RB COUNT-C MSB information</u>	<u>MP</u>		<u>RB COUNT-C MSB information 10.3.4.21</u>	

10.2.64 COUNTER CHECK RESPONSE

This message is used by the UE to respond to a COUNTER CHECK message.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Multi	IE type and reference	Semantics description
<u>Message Type</u>	<u>MP</u>			
UE information elements				
<u>Integrity check info</u>	<u>MP</u>		Integrity check info 10.3.3.16	
RB information elements				
<u>RB COUNT-C information</u>	<u>OP</u>	1 to < maxRBAllRABs >		For each RB (excl SRBs) using UM or AM RLC whose COUNT-C MSB values did not match with the values received from the UTRAN.
<u>>RB COUNT-C information</u>	<u>MOP</u>		<u>RB COUNT-C information 10.3.4.22</u>	

10.3.4.21 RB COUNT-C MSB information

The MSB of the COUNT-C values of the radio bearer.

<u>Information Element/Group name</u>	<u>Needed</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>RB identity</u>	<u>MP</u>		<u>RB identity</u> <u>10.3.4.11</u>	
<u>COUNT-C-MSB-uplink</u>	<u>MP</u>		<u>Integer (0..</u> <u>2²⁵-1)</u>	<u>25 MSBs from COUNT-C</u> <u>associated to this RB</u>
<u>COUNT-C-MSB-downlink</u>	<u>MP</u>		<u>Integer (0..</u> <u>2²⁵-1)</u>	<u>25 MSBs from COUNT-C</u> <u>associated to this RB</u>

10.3.4.22. RB COUNT-C information

The COUNT-C values of the radio bearer.

<u>Information Element/Group name</u>	<u>Needed</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>RB identity</u>	<u>MP</u>		<u>RB identity</u> <u>10.3.4.11</u>	
<u>COUNT-C-uplink</u>	<u>MP</u>		<u>Integer (0..</u> <u>2³²-1)</u>	
<u>COUNT-C-downlink</u>	<u>MP</u>		<u>Integer (0..</u> <u>2³²-1)</u>	

11.1 General message structure

IMPORTS

```

ActiveSetUpdate,
ActiveSetUpdateComplete,
ActiveSetUpdateFailure,
CellUpdate,
CellUpdateConfirm,
CounterCheck,
CounterCheckResponse,
DownlinkDirectTransfer,
DownlinkOuterLoopControl,
HandoverToUTRANCommand,
HandoverToUTRANComplete,
InitialDirectTransfer,
InterSystemHandoverCommand,
InterSystemHandoverFailure,
MeasurementControl,
MeasurementControlFailure,
MeasurementReport,
PagingType1,
PagingType2,
PhysicalChannelReconfiguration,
PhysicalChannelReconfigurationComplete,
PhysicalChannelReconfigurationFailure,
PhysicalSharedChannelAllocation,
PUSCHCapacityRequest,
RadioBearerReconfiguration,
RadioBearerReconfigurationComplete,
RadioBearerReconfigurationFailure,
RadioBearerRelease,
RadioBearerReleaseComplete,
RadioBearerReleaseFailure,
RadioBearerSetup,
RadioBearerSetupComplete,
RadioBearerSetupFailure,

```

```

RNTIReallocation,
RNTIReallocationComplete,
RNTIReallocationFailure,
RRCConnectionReEstablishment,
RRCConnectionReEstablishment-CCCH,
RRCConnectionReEstablishmentComplete,
RRCConnectionReEstablishmentRequest,
RRCConnectionReject,
RRCConnectionRelease,
RRCConnectionReleaseComplete,
RRCConnectionRequest,
RRCConnectionSetup,
RRCConnectionSetupComplete,
RRCStatus,
SecurityModeCommand,
SecurityModeComplete,
SecurityModeFailure,
SignallingConnectionRelease,
SystemInformation-BCH,
SystemInformation-FACH,
SystemInformationChangeIndication,
TransportChannelReconfiguration,
TransportChannelReconfigurationComplete,
TransportChannelReconfigurationFailure,
TransportFormatCombinationControl,
TransportFormatCombinationControlFailure,
UECapabilityEnquiry,
UECapabilityInformation,
UECapabilityInformationConfirm,
UplinkDirectTransfer,
UplinkPhysicalChannelControl,
URAUUpdate,
URAUUpdateConfirm,
URAUUpdateConfirm-CCCH
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,
    cellUpdateConfirm         CellUpdateConfirm,
    counterCheck              CounterCheck,
    downlinkDirectTransfer    DownlinkDirectTransfer,
    downlinkOuterLoopControl  DownlinkOuterLoopControl,
    interSystemHandoverCommand InterSystemHandoverCommand,
    measurementControl        MeasurementControl,
    pagingType2               PagingType2,
    physicalChannelReconfiguration PhysicalChannelReconfiguration,
    radioBearerReconfiguration RadioBearerReconfiguration,
    radioBearerRelease        RadioBearerRelease,
    radioBearerSetup          RadioBearerSetup,
    rntiReallocation          RNTIReallocation,
    rrcConnectionReEstablishment RRCConnectionReEstablishment,
    rrcConnectionRelease      RRCConnectionRelease,
    securityModeCommand       SecurityModeCommand,
    signallingConnectionRelease SignallingConnectionRelease,
    transportChannelReconfiguration TransportChannelReconfiguration,
    transportFormatCombinationControl TransportFormatCombinationControl,
    ueCapabilityEnquiry       UECapabilityEnquiry,
    ueCapabilityInformationConfirm UECapabilityInformationConfirm,
    uplinkPhysicalChannelControl UplinkPhysicalChannelControl,
    uraUpdateConfirm          URAUpdateConfirm,
    extension                  NULL
}

--*****

```

```

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

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete      ActiveSetUpdateComplete,
    activeSetUpdateFailure      ActiveSetUpdateFailure,
    counterCheckResponse        CounterCheckResponse,
    handoverToUTRANComplete     HandoverToUTRANComplete,
    initialDirectTransfer       InitialDirectTransfer,
    interSystemHandoverFailure  InterSystemHandoverFailure,
    measurementReport           MeasurementReport,
    physicalChannelReconfigurationComplete
                                PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete
                                RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure
                                RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete  RadioBearerReleaseComplete,
    radioBearerReleaseFailure   RadioBearerReleaseFailure,
    radioBearerSetupComplete    RadioBearerSetupComplete,
    radioBearerSetupFailure     RadioBearerSetupFailure,
    rntiReallocationComplete    RNTIReallocationComplete,
    rntiReallocationFailure     RNTIReallocationFailure,
    rrcConnectionReEstablishmentComplete
                                RRCConnectionReEstablishmentComplete,
    rrcConnectionReleaseComplete
                                RRCConnectionReleaseComplete,
    rrcConnectionSetupComplete  RRCConnectionSetupComplete,
    rrcStatus                   RRCStatus,
    securityModeComplete        SecurityModeComplete,
    securityModeFailure         SecurityModeFailure,
    transportChannelReconfigurationComplete
                                TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                TransportChannelReconfigurationFailure,
    transportFormatCombinationControlFailure
                                TransportFormatCombinationControlFailure,
    ueCapabilityInformation      UECapabilityInformation,
    uplinkDirectTransfer         UplinkDirectTransfer,
    extension                    NULL
}

```

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

    PredefinedConfigIdentity,
    RAB-Info,
    RAB-InformationSetupList,
    RB-ActivationTimeInfo,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,

```

```

RB-COUNT-C-MSB-InformationList,
  RB-InformationAffectedList,
  RB-InformationReconfigList,
  RB-InformationReleaseList,
  RB-InformationSetupList,
  RB-WithPDCP-InfoList,
  SRB-InformationSetupList,
  SRB-InformationSetupList2
FROM RadioBearer-IEs

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

CounterCheck ::= SEQUENCE {
  -- Radio bearer IEs
  rb-COUNT-C-MSB-InformationList RB-COUNT-C-MSB-InformationList,
  -- Extension mechanism
  non-Release99-Information SEQUENCE {} OPTIONAL
}

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

CounterCheckResponse ::= SEQUENCE {
  -- Radio bearer IEs
  rb-COUNT-C-InformationList RB-COUNT-C-InformationList OPTIONAL,
  -- Extension mechanism
  non-Release99-Information SEQUENCE {} OPTIONAL
}

```

11.3.4 Radio bearer information elements

IMPORTS

```

  algorithmCount,
  maxMuxOptionsCount,
  maxOtherRBcount,
  maxPredefConfigCount,
  maxRABcount,
  maxRB-WithPDCPcount,
  maxRBallRABs,
  maxRBcount,
  maxReconRBcount,
  maxReconRBs,
  maxRelRBcount,
  maxSetupRBcount,
  maxSRBcount
FROM Constant-definitions;

-- Upper limit is 2^32 - 1
COUNT-C ::= INTEGER (0..4294967295)

-- Upper limit is 2^25 - 1
COUNT-C-MSB ::= INTEGER (0..33554431)

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

11.4 Constant definitions

maxRBallRABs INTEGER ::= 28

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	310r5
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team
For submission to: TSG-RAN #8 <i>list expected approval meeting # here</i> ↑		Current Version: 3.2.0
for approval <input checked="" type="checkbox"/> for information <input type="checkbox"/>		strategic <input type="checkbox"/> non-strategic <input type="checkbox"/> <i>(for SMG use only)</i>

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 UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 24 May 2000

Subject: Editorial corrections on security

Work item:

Category:	F Correction <input checked="" type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
------------------	--	-----------------	--

(only one category Shall be marked With an X)

Reason for change:

- Signalling radio bearer identity is needed in the calculation of message authentication code
- General clarifications on the correct use of HFN
- HFN shall be present Mandatorily-with-Default value 0 in certain COMPLETE messages because an emergency call may be set up without the use of USIM.
- Failure Count removed from INTEGRITY_PROTECTION_INFO
- START values for all CN domains shall be sent from UE to UTRAN in certain COMPLETE messages**

Clauses affected: 8.1.3.4, 8.2.1.3, 8.5.2, 10.2.9, 10.2.30, 10.2.43, 10.2.46, 11.2, 11.3.3, 13.4.3

Other specs Affected:	Other 3G core specifications <input type="checkbox"/> Other GSM core specifications <input type="checkbox"/> MS test specifications <input type="checkbox"/> BSS test specifications <input type="checkbox"/> O&M specifications <input type="checkbox"/>	→ List of CRs: → List of CRs: → List of CRs: → List of CRs: → List of CRs:
------------------------------	---	--

Other comments:



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

8.1.3.4 Reception of a 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 identical, the UE shall stop timer T300, and perform the following actions;
- if the values are different, the UE shall ignore the rest of the message.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall:

- store the value of the IE "U-RNTI"; and
- initiate the signalling link parameters according to the IE "RB mapping info".

If the IE "C-RNTI" is included, the UE shall:

- use that C-RNTI on common transport channels in the current cell.

If neither the IE "PRACH info (for RACH)", nor the IE "Uplink DPCH info" is included, the UE shall:

- let the physical channel of type PRACH that is given in system information to be the default in uplink for RACH.

If neither the IE "Secondary CCPCH info", nor the IE "Downlink DPCH info" is included, the UE shall:

- start to receive the physical channel of type Secondary CCPCH that is given in system information to be used as default by FACH.

The UE shall enter a state according to 8.5.8.

The UE shall transmit an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH, with contents as specified below.

The UE shall include START [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, the UE shall include its UTRAN-specific capabilities in the IE "UE radio capability".

If requested in the IE "Capability update requirement" sent in the RRC CONNECTION SETUP message, the UE shall include its inter-system capabilities in the IE "UE system specific capability".

When the transmission 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", and the procedure ends.

8.2.1.3 Reception of a RADIO BEARER SETUP message by the UE

Upon reception of a RADIO BEARER SETUP message the UE shall perform actions as specified below and transmit a RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER SETUP COMPLETE message has been confirmed by RLC the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall be able to receive an RADIO BEARER SETUP message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency

The UE shall

- For the new radio bearer(s), use the multiplexing option applicable for the transport channels used according to the IE "RB mapping info"
- ~~_____~~ For the new radio bearer(s), if the variable CIPHERING_STATUS is set to "Started", initialise ciphering on those radio bearers using the current ciphering hyperframe number. For non-transparent mode radio bearers this hyperframe number is the highest used HFN (during the lifetime of the current cipher/integrity key set) incremented by one. All transparent mode radio bearers have a common hyperframe number (in the MAC layer), which is not incremented due to addition of new transparent radio bearer(s).
- In case of non-transparent mode radio bearers transmit the current hyperframe number to UTRAN in RADIO BEARER SETUP COMPLETE message.
- For radio bearer(s) existing prior to the message, use the multiplexing option applicable for the transport channels used, according to their IE "RB mapping info" or their previously stored multiplexing options.
- Configure MAC multiplexing if that is needed in order to use said transport channel(s).
- Use MAC logical channel priority when selecting TFC in MAC.
- Suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers

If the IE "New C-RNTI" is included, the UE shall

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If the IE "RAB information to setup" is included, the procedure is used to establish radio bearers belonging to a radio access bearer and the UE shall:

- Associate the new radio bearers with the radio access bearer that is identified by the IE "RAB info".
- Check whether that radio access bearer exists in the variable ESTABLISHED_RABS.

If the radio access bearer exists the UE shall:

- store information about the radio bearer under the radio access bearer entry in the variable ESTABLISHED_RABS.

If the radio access bearer does not exist the UE shall:

- store information about the new radio access bearer in the variable ESTABLISHED_RABS
- store information about the radio bearer under the radio access bearer entry in the variable ESTABLISHED_RABS.
- indicate the establishment of the radio access bearer to the upper layer entity using the IE "CN domain identity", forwarding the content of the IE "RAB identity".
- For each new radio bearer, the UE shall:
 - create a new RAB subflow for the radio access bearer.
 - Number the RAB subflow in the order of when the radio bearers within the radio access bearers were created.
 - Store the number of the RAB subflow in the variable ESTABLISHED_RABS.
- Indicate the establishment of each new RAB subflow to the upper layer entity using the IE "CN domain identity"

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information

The UE shall enter a state according to 8.5.8.

8.5.2 Actions when entering idle mode from connected mode

When entering idle mode from connected mode, the UE shall attempt to select a suitable cell to camp on. The UE shall perform cell selection when leaving connected mode according to [25.304].

While camping on a cell, the UE shall acquire system information according to the system information procedure in section 8.1, perform measurements according to the measurement control procedure specified in section 8.4 and, if registered, be prepared to receive paging and notification messages according to the paging procedure in section 8.2.

If IE "PLMN identity" within variable SELECTED_PLMN has the value "GSM-MAP", the UE shall delete any NAS system information received in connected mode, acquire the NAS system information in system information block type 1, and proceed according to 8.5.7.1.2.

The UE shall compare the 20 most significant bits of the hyper frame numbers **in each CN domain (HFN CS and HFN PS)** for each radio bearer (including signalling radio bearers) that has existed during the connection, after possible authentication and ciphering/integrity key change. Even if a radio bearer has been released, its HFN must be temporarily saved until another HFN instance (of the radio bearers towards the same CN domain) exceeds the saved value or until ciphering/integrity keys for this domain are changed. The UE shall store into the USIM the 20 most significant bits of the highest **HFN in each CN domain HFN CS and of the highest HFN PS**.

~~The UE shall compare the values of "Uplink HFN" and "Downlink HFN" in the variable INTEGRITY_PROTECTION_INFO for all signalling radio bearers, and store the highest value in the USIM.~~

10.2.9 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	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
START list	CHMP	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	
Integrity protection >STARTHyper frame number	MP		Hyper frame number 10.3.3.13	

10.2.30 RADIO BEARER SETUP COMPLETE

NOTE: Functional description of this message to be included here

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE mode	OP			
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.69	This information element shall be present in case of handover procedure. Calculated timing advance value for the new cell after handover in a synchronous TDD network
>FDD				(no data)
Hyper frame number	OPMP		Hyper frame number 10.3.3.13	This information element is not needed for transparent mode RBs
RB Information elements				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.10	

10.2.43 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	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
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	
>STARTHyper frame number	MP		Hyper frame number 10.3.3.13	START value to be used in this CN domain. Default value is 0
UE information elements				
UE radio access capability	MP		UE radio access capability 10.3.3.41	
UE system specific capability	OP		Inter-system message 10.3.8.6	

10.2.46 SECURITY MODE COMPLETE

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Hyper frame number	MDOP		Hyper frame number 10.3.3.13	Default value is 0. Only present if there is no active radio bearers towards "CN domain identity" where the SECURITY MODE COMMAND was initiated or if none of these radio bearers uses ciphered connection.
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
RB Information elements				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.10	

11.2 PDU definitions

```

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

IMPORTS

    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CellUpdateCause,
    CipheringAlgorithm,
    CipheringModeInfo,
    DRX-CycleLengthCoefficient,
    DRX-Indicator,
    EstablishmentCause,
    FailureCauseWithProtErr,
    HyperFrameNumber,
    InitialUE-Capability,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    PagingCause,
    PagingRecordList,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithInfo,
    Re-EstablishmentTimer,
    RedirectionInfo,
    RejectionCause,
    ReleaseCause,
    RLC-ReconfigurationIndicator,
    RRC-MessageTX-Count,
    STARTList,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    URA-UpdateCause,
    WaitTime
FROM UserEquipment-IEs

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

HandoverToUTRANComplete ::= SEQUENCE {
    -- User equipment IEs
    startList STARTList OPTIONAL,
    integrityProtectionHFN HyperFrameNumber,
    -- Extension mechanism
    non-Release99-Information SEQUENCE {} OPTIONAL
}

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

RadioBearerSetupComplete ::= SEQUENCE {
    -- User equipment IEs
    ul-IntegProtActivationInfo IntegrityProtActivationInfo OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd NULL,
        tdd SEQUENCE {
            ul-TimingAdvance UL-TimingAdvance OPTIONAL
        }
    },
    hyperFrameNumber HyperFrameNumber OPTIONAL,
    -- Radio bearer IEs
    rb-UL-CiphActivationTimeInfo RB-ActivationTimeInfo OPTIONAL,
    -- Extension mechanism
    non-Release99-Information SEQUENCE {} OPTIONAL
}

```

```

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

RRCConnectionSetupComplete ::= SEQUENCE {
  -- User equipment IEs
  startList          STARTList,
  hyperFrameNumber  HyperFrameNumber,
  ue-RadioAccessCapability  UE-RadioAccessCapability,
  ue-SystemSpecificCapability  InterSystemMessage          OPTIONAL,
  -- Extension mechanism
  non-Release99-Information  SEQUENCE {}          OPTIONAL
}

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

SecurityModeComplete ::= SEQUENCE {
  -- User equipment IEs
  hyperFrameNumber  HyperFrameNumber          OPTIONAL,
  ul-IntegProtActivationInfo  IntegrityProtActivationInfo  OPTIONAL,
  -- Radio bearer IEs
  rb-UL-CiphActivationTimeInfo  RB-ActivationTimeInfoList  OPTIONAL,
  -- Extension mechanism
  non-Release99-Information  SEQUENCE {}          OPTIONAL
}

```

11.3.3 User equipment information elements

IMPORTS

```

maxAlgoTypeCount,
maxCNDomains,
maxDRAC-Classes,
maxFrequencyBandsCount,
maxNoSystemCapability,
maxRAT-Count,
pageCount
FROM Constant-definitions;

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

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

```

13.4.3 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
Status	M		Enumerated (Not started, Started)	
Failure count	M		Integer(0..N 316)	
Signalling radio bearer specific integrity protection information		4		Status information for RB#0-3 in that order
> Uplink HFN	M		Integrity protection hyper frame number	
> Downlink HFN	M		Integrity protection hyper frame number	
> Uplink RRC Message sequence number	M		Integer (0..15)	
> Downlink RRC Message sequence number	M		Integer (0..15)	

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 311r2

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG-RAN #8**
list expected approval meeting # here ↑

for approval **X**
for information

strategic (for SMG use only)
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 UTRAN / Radio Core Network

Source:

TSG-RAN WG2

Date:

April 10, 2000

Subject:

Security capability

Work item:

Category:

(only one category shall be marked with an X)

F Correction
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
Release 00

Reason for change:

TS 25.331 has been aligned according to TS 33.102.
"The network must have the "UE security capability" information before the integrity protection can start, i.e. the "UE security capability" must be sent to the network in an unprotected message. Returning the "UE security capability" later on to the UE in a protected message will give UE the possibility to verify that it was the correct "UE security capability" that reached the network. "

Clauses affected:

10.2.45, 10.3.3.4, 10.3.3.18, 10.3.3.37, 11.2, 11.3.3

Other specs affected:

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

Other comments:



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

10.2.45 SECURITY MODE COMMAND

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN to UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Ciphering algorithm Security capability	MP		Security capability Ciphering algorithm 10.3.3.437	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	Only present if ciphering shall be controlled
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	Only present if integrity protection shall be controlled
CN Information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	Indicates which cipher and integrity protection keys are applicable

10.3.3.37 Security capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ciphering algorithm capability	MP		Bit string(16) Ciphering algorithm 10.3.3.4	"0000000000000000 ₂ ": UEA0, no encryption supported; "0000000000000001 ₂ ": UEA1, Kasumi supported
Integrity protection algorithm capability	MP		Bit string(16) Integrity protection algorithm 10.3.3.18	"0000000000000001 ₂ ": UEA1, Kasumi supported

10.3.3.4 Ciphering Algorithm

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ciphering algorithm	MP		Bit string(4) ("0000 ₂ ": UEA0, no encryption; "0001 ₂ ": UEA1, Kasumi.) Enumerated (Standard UMTS Encryption Algorithm UEA1)	At least 15 spare values needed. Criticality: Criticality reject is needed.

10.3.3.18 Integrity protection Algorithm

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Integrity protection algorithm	MP		<u>Bit string(4)</u> <u>("0001₂":UIA</u> <u>1, Kasumi.)</u> <u>Enumerated(</u> <u>Standard</u> <u>UMTS</u> <u>Integrity</u> <u>Algorithm</u> <u>UIA1)</u>	At least 15 spare values needed. Criticality: Criticality reject is needed.

11.2 PDU definitions

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

SecurityModeCommand ::= SEQUENCE {
    -- User equipment IEs
    cipheringAlgorithm          SecurityCapabilityCipheringAlgorithm,
    cipheringModeInfo           CipheringModeInfo           OPTIONAL,
    integrityProtectionModeInfo IntegrityProtectionModeInfo  OPTIONAL,
    -- Core network IEs
    cn-DomainIdentity          CN-DomainIdentity,
    -- Extension mechanism
    non-Release99-Information  SEQUENCE {}                 OPTIONAL
}

```

11.3.3 User equipment information elements

```
CipheringAlgorithm ::= BIT STRING (SIZE (4))ENUMERATED {
standardUEA1,
spare1, spare2, spare3, spare4,
spare5, spare6, spare7, spare8,
spare9, spare10, spare11, spare12,
spare13, spare14, spare15 }

IntegrityProtectionAlgorithm ::= BIT STRING (SIZE (4))ENUMERATED {
standardUIA1,
spare1, spare2, spare3, spare4,
spare5, spare6, spare7, spare8,
spare9, spare10, spare11, spare12,
spare13, spare14, spare15 }

SecurityCapability ::= SEQUENCE {
    cipheringAlgorithm          BIT STRING (SIZE (16))CipheringAlgorithm,
    integrityProtectionAlgorithm BIT STRING (SIZE (16))IntegrityProtectionAlgorithm
}

```

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 312r1		Current Version: 3.2.0	
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team			
For submission to: TSG-RAN #8 <small>list expected approval meeting # here ↑</small>		for approval for information		strategic <input type="checkbox"/> non-strategic <input type="checkbox"/> (for SMG use only)	
		<input checked="" type="checkbox"/>			
		<input type="checkbox"/>			

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 UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: **TSG-RAN WG2** **Date:** **06.04.2000**

Subject: **Corrections on ASN.1 definitions**

Work item: _____

Category:	F Correction <input checked="" type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>		Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
------------------	--	--	-----------------	--

(only one category shall be marked with an X)

Reason for change:

This CR contains corrections to the RRC ASN.1 definitions. These corrections are necessary to bring the ASN.1 definitions in line with the tabular descriptions in TS 25.331. The changes include:

- In RadioBearerSetup and RRCConnectionReEstablishment dl-InformationPerRL-List is made OPTIONAL
- In RRCConnectionRelease rrc-MessageTX-Count is made OPTIONAL
- HCS-ServingCellInformation deleted from UTRAN mobility IEs and defined in Measurement IEs
- In MappingFunctionParameter upperLimit is made OPTIONAL
- Q-Offset removed from UTRAN mobility IEs
- In PDCP-Capability supportedHC-AlgoTypeList is made OPTIONAL
- DL-AM-RLC-Mode corrected, ReceptionRLC-DiscardTimer removed
- HeaderCompressionInfo: reconfigurationReset removed
- UL-AM-RLC-Mode: transmissionRLC-Discard made OPTIONAL
- Typo corrections (trasport -> transport)
- PreDefTransChConfiguration: TFCS identities are made OPTIONAL
- SignalledGainFactors: referenceTFC-Number is made OPTIONAL
- TFCS-Identity: tfcs-ID is made DEFAULT 1
- UL-CommonTransChInfo: In the TDD choice TFCS-Identity is replaced by IndividualUL-CCTrCH-InfoList
- DL-DPCH-InfoCommon: dl-DPCH-PowerControllInfo is made OPTIONAL
- DL-DPCH-InfoPerRL: OPTIONAL removed from pCPICH-UsageForChannelEst
- DL-DPCH-PowerControllInfo: OPTIONAL removed from dpc-Mode
- DL-PDSCH-Information: elements made OPTIONAL
- IndividualTimeslotInfo: midambleShift made OPTIONAL
- MidambleConfiguration: defaults added
- PDSCH-CodeMapping: dl-ScramblingCode made OPTIONAL
- PDSCH-SHO-DCH-Info: tfci-CombiningSet made OPTIONAL
- CellInfo and CellInfoSI: primaryCCPCH-TX-Power made OPTIONAL
- CellMeasuredResults: primaryCCPCH-RSCP added

- HCS-CellReselectInformation: penaltyTime made OPTIONAL, comment added
- UL-DeletedTransChInformation removed, DeletedUL-TransChInformation edited, DL-DeletedTransChInformation renamed to DeletedDL-TransChInformation
- FACH-PCH-Information and FACH-PCH-InformationList removed from module PhysicalChannel-IEs
- Spare values added to ReceivingWindowSize and TransmissionWindowSize
- Some syntax errors caused by working with a Word version and an ASN.1 tool version of the definitions simultaneously have been corrected.

Clauses affected: 11

Other specs affected:

Other 3G core specifications
 Other GSM core specifications
 MS test specifications
 BSS test specifications
 O&M specifications

→ List of CRs:
 → List of CRs:
 → List of CRs:
 → List of CRs:
 → List of CRs:

Other comments:

--



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

11 Message and Information element abstract syntax (with ASN.1)

This clause contains definitions for RRC PDUs and IEs using a subset of ASN.1 as specified in TR 25.921. PDU and IE definitions are grouped into separate ASN.1 modules.

NOTE: The proposal is to keep both clause 10 and 11 (at least until all messages and information elements are fully discussed and agreed by 3GPP RAN WG2). Clause 10 is intended to give an abstract description (in English) of the messages and information elements whereas clause 11 should contain the exact normative definitions with all necessary details.

11.1 General message structure

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

```
BEGIN
```

```
IMPORTS
```

```
ActiveSetUpdate,  
ActiveSetUpdateComplete,  
ActiveSetUpdateFailure,  
CellUpdate,  
CellUpdateConfirm,  
DownlinkDirectTransfer,  
DownlinkOuterLoopControl,  
HandoverToUTRANCommand,  
HandoverToUTRANComplete,  
InitialDirectTransfer,  
InterSystemHandoverCommand,  
InterSystemHandoverFailure,  
MeasurementControl,  
MeasurementControlFailure,  
MeasurementReport,  
PagingType1,  
PagingType2,  
PhysicalChannelReconfiguration,  
PhysicalChannelReconfigurationComplete,  
PhysicalChannelReconfigurationFailure,  
PhysicalSharedChannelAllocation,  
PUSCHCapacityRequest,  
RadioBearerReconfiguration,  
RadioBearerReconfigurationComplete,  
RadioBearerReconfigurationFailure,  
RadioBearerRelease,  
RadioBearerReleaseComplete,  
RadioBearerReleaseFailure,  
RadioBearerSetup,  
RadioBearerSetupComplete,  
RadioBearerSetupFailure,  
RNTIReallocation,  
RNTIReallocationComplete,  
RNTIReallocationFailure,  
RRCConnectionReEstablishment,  
RRCConnectionReEstablishment-CCCH,  
RRCConnectionReEstablishmentComplete,  
RRCConnectionReEstablishmentRequest,  
RRCConnectionReject,  
RRCConnectionRelease,  
RRCConnectionReleaseComplete,  
RRCConnectionRequest,  
RRCConnectionSetup,  
RRCConnectionSetupComplete,  
RRCStatus,  
SecurityModeCommand,  
SecurityModeComplete,  
SecurityModeFailure,  
SignallingConnectionRelease,  
SystemInformation-BCH,  
SystemInformation-FACH,
```

```

SystemInformationChangeIndication,
TransportChannelReconfiguration,
TransportChannelReconfigurationComplete,
TransportChannelReconfigurationFailure,
TransportFormatCombinationControl,
TransportFormatCombinationControlFailure,
UECapabilityEnquiry,
UECapabilityInformation,
UECapabilityInformationConfirm,
UplinkDirectTransfer,
UplinkPhysicalChannelControl,
URAUUpdate,
URAUUpdateConfirm,
URAUUpdateConfirm-CCCH
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,
    cellUpdateConfirm              CellUpdateConfirm,
    downlinkDirectTransfer         DownlinkDirectTransfer,
    downlinkOuterLoopControl       DownlinkOuterLoopControl,
    interSystemHandoverCommand     InterSystemHandoverCommand,
    measurementControl             MeasurementControl,
    pagingType2                    PagingType2,
    physicalChannelReconfiguration PhysicalChannelReconfiguration,
    radioBearerReconfiguration     RadioBearerReconfiguration,
    radioBearerRelease             RadioBearerRelease,
    radioBearerSetup               RadioBearerSetup,
    rntiReallocation               RNTIReallocation,
    rrcConnectionReEstablishment   RRCConnectionReEstablishment,
    rrcConnectionRelease           RRCConnectionRelease,
    securityModeCommand            SecurityModeCommand,
    signallingConnectionRelease     SignallingConnectionRelease,
    transportChannelReconfiguration TransportChannelReconfiguration,
    transportFormatCombinationControl TransportFormatCombinationControl,
    ueCapabilityEnquiry             UECapabilityEnquiry,
    ueCapabilityInformationConfirm   UECapabilityInformationConfirm,
    uplinkPhysicalChannelControl    UplinkPhysicalChannelControl,
    uraUpdateConfirm               URAUpdateConfirm,
    extension                       NULL
}

```

```

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

```

```

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

```

```

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete        ActiveSetUpdateComplete,
    activeSetUpdateFailure         ActiveSetUpdateFailure,
    handoverToUTRANComplete        HandoverToUTRANComplete,
    initialDirectTransfer          InitialDirectTransfer,
    interSystemHandoverFailure     InterSystemHandoverFailure,
    measurementReport              MeasurementReport,
    physicalChannelReconfigurationComplete PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure PhysicalChannelReconfigurationFailure,
}

```



```

radioBearerReconfigurationComplete RadioBearerReconfigurationComplete,
radioBearerReconfigurationFailure RadioBearerReconfigurationFailure,
radioBearerReleaseComplete RadioBearerReleaseComplete,
radioBearerReleaseFailure RadioBearerReleaseFailure,
radioBearerSetupComplete RadioBearerSetupComplete,
radioBearerSetupFailure RadioBearerSetupFailure,
rntiReallocationComplete RNTIReallocationComplete,
rntiReallocationFailure RNTIReallocationFailure,
rrcConnectionReEstablishmentComplete
RRCCConnectionReEstablishmentComplete,
rrcConnectionReleaseComplete RRCCConnectionReleaseComplete,
rrcConnectionSetupComplete RRCCConnectionSetupComplete,
rrcStatus RRCStatus,
securityModeComplete SecurityModeComplete,
securityModeFailure SecurityModeFailure,
transportChannelReconfigurationComplete
TransportChannelReconfigurationComplete,
transportChannelReconfigurationFailure
TransportChannelReconfigurationFailure,
transportFormatCombinationControlFailure
TransportFormatCombinationControlFailure,
ueCapabilityInformation UECapabilityInformation,
uplinkDirectTransfer UplinkDirectTransfer,
extension NULL
}

```

```

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

```

```

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

```

```

DL-CCCH-MessageType ::= CHOICE {
  rrcConnectionReEstablishment RRCCConnectionReEstablishment-CCCH,
  rrcConnectionReject RRCCConnectionReject,
  rrcConnectionSetup RRCCConnectionSetup,
  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 RRCCConnectionReEstablishmentRequest,
  rrcConnectionRequest RRCCConnectionRequest,
  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 {
    integrityCheckInfo    IntegrityCheckInfo    OPTIONAL,
    message                DL-SHCCH-MessageType
}

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

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

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

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

--*****
--
-- Handover to UTRAN command
--
--*****

HO-ToUTRAN-CommandMessage ::= SEQUENCE {
    message                HandoverToUTRANCommand
}

--*****
--
-- 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-CycleLengthCoefficient,
    DRX-Indicator,
    EstablishmentCause,
    FailureCauseWithProtErr,
    HyperFrameNumber,
    InitialUE-Capability,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    PagingCause,
    PagingRecordList,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithInfo,
    Re-EstablishmentTimer,
    RedirectionInfo,
    RejectionCause,
    ReleaseCause,
    RLC-ReconfigurationIndicator,
    RRC-MessageTX-Count,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    URA-UpdateCause,
    WaitTime
FROM UserEquipment-IEs

    PredefinedConfigIdentity,
    RAB-Info,
    RAB-InformationSetupList,
    RB-ActivationTimeInfo,
    RB-ActivationTimeInfoList,
    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,
UL-AddReconfTransChInfoList,
UL-CommonTransChInfo,
UL-DeletedTransChInfoList
FROM TransportChannel-IEs

```

```

AllocationPeriodInfo,
CCTrCH-PowerControlInfo,
ConstantValue,
CPCH-SetInfo,
DL-CommonInformation,
DL-InfoPerRL-List,
DL-InformationPerRL,
DL-InformationPerRL-List,
DL-DPCH-InfoCommon,
DL-DPCH-PowerControlInfo,
DL-OuterLoopControl,
DL-PDSCH-Information,
FrequencyInfo,
IndividualTS-InterferenceList,
MaxAllowedUL-TX-Power,
PDSCH-Info,
PRACH-RACH-Info,
PrimaryCCPCH-TX-Power,
PUSCH-Info,
RL-AdditionInformationList,
RL-RemovalInformationList,
UL-DPCH-InfoShort,
SSDT-Information,
TFC-ControlDuration,
TimeslotList,
TX-DiversityMode,
UL-ChannelRequirement,
UL-DPCH-Info,
UL-DPCH-InfoHO,
UL-Interference,
UL-TimingAdvance
FROM PhysicalChannel-IEs

```

```

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

```

```

BCCH-ModificationInfo,
InterSystemHO-Failure,
InterSystemMessage,
ProtocolErrorInformation,
SegCount,
SegmentIndex,
SFN-Prime,
SIB-Content,
SIB-Data,
SIB-Type
FROM Other-IEs;

```

```

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

```

```

ActiveSetUpdate ::= 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,
-- Extension mechanism
  non-Release99-Information SEQUENCE {}          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
  non-Release99-Information    SEQUENCE {}                  OPTIONAL
}

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

ActiveSetUpdateFailure ::= SEQUENCE {
  -- User equipment IEs
  failureCause                FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information    SEQUENCE {}                  OPTIONAL
}

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

CellUpdate ::= SEQUENCE {
  -- User equipment IEs
  u-RNTI                      U-RNTI,
  am-RLC-ErrorIndication      BOOLEAN,
  cellUpdateCause             CellUpdateCause,
  protocolErrorIndicator      ProtocolErrorIndicatorWithInfo,
  -- TABULAR: Protocol error information is nested in
  -- ProtocolErrorIndicatorWithInfo.
  -- Measurement IEs
  measuredResultsOnRACH       MeasuredResultsOnRACH      OPTIONAL,
  -- Extension mechanism
  non-Release99-Information    SEQUENCE {}                  OPTIONAL
}

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

CellUpdateConfirm ::= 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  DRX-CycleLengthCoefficient   OPTIONAL,

```

```

    rlc-ReconfIndicatorC-Plane      RLC-ReconfigurationIndicator,
    rlc-ReconfIndicatorU-Plane      RLC-ReconfigurationIndicator,
-- 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
    maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power      OPTIONAL,
    prach-RACH-Info                 PRACH-RACH-Info           OPTIONAL,
    dl-InformationPerRL              DL-InformationPerRL        OPTIONAL,
-- Extension mechanism
    non-Release99-Information        SEQUENCE {}                OPTIONAL
}

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

DownlinkDirectTransfer ::= SEQUENCE {
-- Core network IEs
    cn-DomainIdentity               CN-DomainIdentity,
    nas-Message                     NAS-Message,
-- Extension mechanism
    non-Release99-Information        SEQUENCE {}                OPTIONAL
}

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

DownlinkOuterLoopControl ::= SEQUENCE {
-- Physical channel IEs
    dl-OuterLoopControl             DL-OuterLoopControl,
    dl-DPCH-PowerControlInfo        DL-DPCH-PowerControlInfo    OPTIONAL,
-- Extension mechanism
    non-Release99-Information        SEQUENCE {}                OPTIONAL
}

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

HandoverToUTRANCommand ::= SEQUENCE {
-- User equipment IEs
    new-U-RNTI                      U-RNTI-Short,
    activationTime                  ActivationTime                OPTIONAL,
    cipheringAlgorithm              CipheringAlgorithm           OPTIONAL,
-- Radio bearer IEs
    rab-Info                        RAB-Info,
-- Specification mode information
    specificationMode               CHOICE {
        complete                    SEQUENCE {
            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-InfoHO,
            dl-CommonInformation     DL-CommonInformation,
            dl-PDSCH-Information      DL-PDSCH-Information        OPTIONAL,
            modeSpecificInfo         CHOICE {
                fdd                  SEQUENCE {
                    cpch-SetInfo     CPCH-SetInfo            OPTIONAL
                },
                tdd                  NULL
            },
            dl-InformationPerRL-List DL-InformationPerRL-List
        },
        preconfiguration             SEQUENCE {

```

```

        predefinedConfigIdentity      PredefinedConfigIdentity,
        ul-DPCH-Info                  UL-DPCH-InfoShort,
        dl-DPCH-InfoCommon            DL-DPCH-InfoCommon,
        dl-InfoPerRL-List             DL-InfoPerRL-List
    }
},
-- Physical channel IEs
frequencyInfo                        FrequencyInfo,
maxAllowedUL-TX-Power                MaxAllowedUL-TX-Power,
modeSpecificPhysChInfo              CHOICE {
    fdd                               NULL,
    tdd                               SEQUENCE {
        primaryCCPCH-TX-Power        PrimaryCCPCH-TX-Power,
        constantValue                ConstantValue,
        ul-Interference              UL-Interference,
        cellParametersID             INTEGER (0..127)
    }
},
-- Extension mechanism
non-Release99-Information            SEQUENCE {}                                OPTIONAL
}

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

HandoverToUTRANComplete ::= SEQUENCE {
-- User equipment IEs
integrityProtectionHFN              HyperFrameNumber,
-- Extension mechanism
non-Release99-Information            SEQUENCE {}                                OPTIONAL
}

-- *****
--
-- 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
non-Release99-Information            SEQUENCE {}                                OPTIONAL
}

-- *****
--
-- INTER-SYSTEM HANDOVER COMMAND
--
-- *****

InterSystemHandoverCommand ::= SEQUENCE {
-- User equipment IEs
activationTime                        ActivationTime                                OPTIONAL,
-- Radio bearer IEs
remainingRAB-Info                    RAB-Info                                OPTIONAL,
-- Other IEs
interSystemMessage                    InterSystemMessage,
-- Extension mechanism
non-Release99-Information            SEQUENCE {}                                OPTIONAL
}

-- *****
--
-- INTER-SYSTEM HANDOVER FAILURE
--
-- *****

InterSystemHandoverFailure ::= SEQUENCE {
-- Other IEs

```

```

        interSystemHO-Failure          InterSystemHO-Failure          OPTIONAL,
    -- Extension mechanism
        non-Release99-Information      SEQUENCE {}                  OPTIONAL
    }

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

MeasurementControl ::= SEQUENCE {
    -- Measurement IEs
        measurementIdentityNumber      MeasurementIdentityNumber,
        measurementCommand              MeasurementCommand,
    -- TABULAR: The measurement type is included in MeasurementCommand.
        measurementReportingMode        MeasurementReportingMode    OPTIONAL,
        additionalMeasurementList        AdditionalMeasurementID-List  OPTIONAL,
    -- Extension mechanism
        non-Release99-Information      SEQUENCE {}                  OPTIONAL
    }

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

MeasurementControlFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
    -- Extension mechanism
        non-Release99-Information      SEQUENCE {}                  OPTIONAL
    }

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

MeasurementReport ::= SEQUENCE {
    -- Measurement IEs
        measurementIdentityNumber      MeasurementIdentityNumber,
        measuredResults                 MeasuredResults            OPTIONAL,
        additionalMeasuredResults        MeasuredResultsList        OPTIONAL,
        eventResults                     EventResults                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information      SEQUENCE {}                  OPTIONAL
    }

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

PagingType1 ::= SEQUENCE {
    -- User equipment IEs
        pagingRecordList                PagingRecordList            OPTIONAL,
    -- Other IEs
        bcch-ModificationInfo           BCCH-ModificationInfo      OPTIONAL,
    -- Extension mechanism
        non-Release99-Information      SEQUENCE {}                  OPTIONAL
    }

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

PagingType2 ::= SEQUENCE {
    -- User equipment IEs
        pagingCause                      PagingCause,
    -- Core network IEs
        cn-DomainIdentity                CN-DomainIdentity,
        pagingRecordTypeID                PagingRecordTypeID,

```



```

-- Extension mechanism
  non-Release99-Information      SEQUENCE {}                OPTIONAL
}

```

```

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

```

```

PhysicalChannelReconfiguration ::= 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      DRX-CycleLengthCoefficient    OPTIONAL,
  re-EstablishmentTimer           Re-EstablishmentTimer         OPTIONAL,
  -- Core network IEs
  cn-InformationInfo              CN-InformationInfo            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 and PRACH info for RACH.
  dl-CommonInformation             DL-CommonInformation           OPTIONAL,
  dl-PDSCH-Information             DL-PDSCH-Information           OPTIONAL,
  modeSpecificInfo                 CHOICE {
    fdd                             SEQUENCE {
      cpch-SetInfo                   CPCH-SetInfo                    OPTIONAL
    },
    tdd                             NULL
  },
  dl-InformationPerRL-List         DL-InformationPerRL-List,
  -- Extension mechanism
  non-Release99-Information        SEQUENCE {}                OPTIONAL
}

```

```

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

```

```

PhysicalChannelReconfigurationComplete ::= SEQUENCE {
  -- User equipment IEs
  ul-IntegProtActivationInfo       IntegrityProtActivationInfo     OPTIONAL,
  modeSpecificInfo                 CHOICE {
    fdd                             NULL,
    tdd                             SEQUENCE {
      ul-TimingAdvance              UL-TimingAdvance               OPTIONAL
    }
  },
  -- Radio bearer IEs
  rb-UL-CiphActivationTimeInfo     RB-ActivationTimeInfo           OPTIONAL,
  rb-WithPDCP-InfoList             RB-WithPDCP-InfoList           OPTIONAL,
  -- Extension mechanism
  non-Release99-Information        SEQUENCE {}                OPTIONAL
}

```

```

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

```

```

PhysicalChannelReconfigurationFailure ::= SEQUENCE {
  -- User equipment IEs
  failureCause                      FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information        SEQUENCE {}                OPTIONAL
}

```

```

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

PhysicalSharedChannelAllocation ::= SEQUENCE {
  -- User equipment IEs
  c-RNTI                               C-RNTI,
  -- Physical channel IEs
  ul-TimingAdvance                     UL-TimingAdvance           OPTIONAL,
  allocationPeriodInfo                 AllocationPeriodInfo       OPTIONAL,
  pusch-Info                           PUSCH-Info                OPTIONAL,
  pdsch-Info                           PDSCH-Info                OPTIONAL,
  timeslotList                         TimeslotList               OPTIONAL,
  -- Extension mechanism
  non-Release99-Information            SEQUENCE {}                OPTIONAL
}

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

PUSCHCapacityRequest ::= SEQUENCE {
  -- User equipment IEs
  c-RNTI                               C-RNTI,
  -- Measurement IEs
  trafficVolumeMeasuredResultsList    TrafficVolumeMeasuredResultsList,
  timeslotListWithISCP                 TimeslotListWithISCP      OPTIONAL,
  primaryCCPCH-RSCP                    PrimaryCCPCH-RSCP         OPTIONAL,
  -- Extension mechanism
  non-Release99-Information            SEQUENCE {}                OPTIONAL
}

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

RadioBearerReconfiguration ::= 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            DRX-CycleLengthCoefficient OPTIONAL,
  re-EstablishmentTimer                 Re-EstablishmentTimer    OPTIONAL,
  -- Core network IEs
  cn-InformationInfo                    CN-InformationInfo        OPTIONAL,
  -- Radio bearer IEs
  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
  }
  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,
  dl-CommonInformation                  DL-CommonInformation     OPTIONAL,
  dl-PDSCH-Information                  DL-PDSCH-Information     OPTIONAL,

```

```

modeSpecificPhysChInfo      CHOICE {
  fdd      SEQUENCE {
    cpch-SetInfo      CPCH-SetInfo      OPTIONAL
  },
  tdd      NULL
},
dl-InformationPerRL-List    DL-InformationPerRL-List,
-- Extension mechanism
non-Release99-Information  SEQUENCE {}      OPTIONAL
}

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

RadioBearerReconfigurationComplete ::= SEQUENCE {
  -- User equipment IEs
  ul-IntegProtActivationInfo      IntegrityProtActivationInfo      OPTIONAL,
  modeSpecificInfo                CHOICE {
    fdd      NULL,
    tdd      SEQUENCE {
      ul-TimingAdvance      UL-TimingAdvance      OPTIONAL
    }
  },
  -- Radio bearer IEs
  rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo      OPTIONAL,
  -- Extension mechanism
  non-Release99-Information      SEQUENCE {}      OPTIONAL
}

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

RadioBearerReconfigurationFailure ::= SEQUENCE {
  -- User equipment IEs
  failureCause                    FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information      SEQUENCE {}      OPTIONAL
}

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

RadioBearerRelease ::= 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        DRX-CycleLengthCoefficient      OPTIONAL,
  re-EstablishmentTimer            Re-EstablishmentTimer      OPTIONAL,
  -- Core network IEs
  cn-InformationInfo                CN-InformationInfo      OPTIONAL,
  -- Radio bearer IEs
  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
  },
  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,
    dl-CommonInformation                DL-CommonInformation           OPTIONAL,
    dl-PDSCH-Information                DL-PDSCH-Information           OPTIONAL,
    modeSpecificPhysChInfo              CHOICE {
        fdd                             SEQUENCE {
            cpch-SetInfo                  CPCH-SetInfo                    OPTIONAL
        },
        tdd                             NULL
    },
    dl-InformationPerRL-List            DL-InformationPerRL-List,
-- Extension mechanism
    non-Release99-Information           SEQUENCE {}                      OPTIONAL
}

```

```

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

```

```

RadioBearerReleaseComplete ::= SEQUENCE {
-- User equipment IEs
    ul-IntegProtActivationInfo          IntegrityProtActivationInfo      OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                             NULL,
        tdd                             SEQUENCE {
            ul-TimingAdvance              UL-TimingAdvance                OPTIONAL
        }
    },
-- Radio bearer IEs
    rb-UL-CiphActivationTimeInfo        RB-ActivationTimeInfo           OPTIONAL,
    rb-WithPDCP-InfoList                 RB-WithPDCP-InfoList           OPTIONAL,
-- Extension mechanism
    non-Release99-Information           SEQUENCE {}                      OPTIONAL
}

```

```

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

```

```

RadioBearerReleaseFailure ::= SEQUENCE {
-- User equipment IEs
    failureCause                         FailureCauseWithProtErr,
-- Extension mechanism
    non-Release99-Information           SEQUENCE {}                      OPTIONAL
}

```

```

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

```

```

RadioBearerSetup ::= 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            DRX-CycleLengthCoefficient        OPTIONAL,
    re-EstablishmentTimer                 Re-EstablishmentTimer            OPTIONAL,
-- Core network IEs
    cn-InformationInfo                    CN-InformationInfo                OPTIONAL,
-- Radio bearer IEs
    srb-InformationSetupList              SRB-InformationSetupList          OPTIONAL,
    rab-InformationSetupList              RAB-InformationSetupList,
    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,
dl-CommonInformation           DL-CommonInformation           OPTIONAL,
dl-PDSCH-Information           DL-PDSCH-Information           OPTIONAL,
modeSpecificPhysChInfo        CHOICE {
    fdd                          SEQUENCE {
        cpch-SetInfo            CPCH-SetInfo          OPTIONAL
    },
    tdd                          NULL
},
dl-InformationPerRL-List       DL-InformationPerRL-List       OPTIONAL,
-- Extension mechanism
non-Release99-Information      SEQUENCE {}                    OPTIONAL
}

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

RadioBearerSetupComplete ::= SEQUENCE {
-- User equipment IEs
ul-IntegProtActivationInfo     IntegrityProtActivationInfo     OPTIONAL,
modeSpecificInfo              CHOICE {
    fdd                        NULL,
    tdd                        SEQUENCE {
        ul-TimingAdvance      UL-TimingAdvance             OPTIONAL
    }
},
hyperFrameNumber              HyperFrameNumber,
-- Radio bearer IEs
rb-UL-CiphActivationTimeInfo   RB-ActivationTimeInfo          OPTIONAL,
-- Extension mechanism
non-Release99-Information      SEQUENCE {}                    OPTIONAL
}

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

RadioBearerSetupFailure ::= SEQUENCE {
-- User equipment IEs
failureCause                   FailureCauseWithProtErr,
-- Extension mechanism
non-Release99-Information      SEQUENCE {}                    OPTIONAL
}

-- *****
--
-- RNTI REALLOCATION
--
-- *****

RNTIReallocation ::= 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     DRX-CycleLengthCoefficient      OPTIONAL,

```

```

-- CN information elements
  cn-InformationInfo          CN-InformationInfo          OPTIONAL,
-- Radio bearer IEs
  rb-WithPDCP-InfoList      RB-WithPDCP-InfoList      OPTIONAL,
-- Extension mechanism
  non-Release99-Information  SEQUENCE {}              OPTIONAL
}

-- *****
--
-- RNTI REALLOCATION COMPLETE
--
-- *****

RNTIReallocationComplete ::= 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
  non-Release99-Information  SEQUENCE {}              OPTIONAL
}

-- *****
--
-- RNTI REALLOCATION FAILURE
--
-- *****

RNTIReallocationFailure ::= SEQUENCE {
  -- UE information elements
  failureCause              FailureCauseWithProtErr,
  -- Extension mechanism
  non-Release99-Information SEQUENCE {}              OPTIONAL
}

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

RRCConnectionReEstablishment ::= 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 DRX-CycleLengthCoefficient  OPTIONAL,
  re-EstablishmentTimer      Re-EstablishmentTimer      OPTIONAL,
  -- 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,
        dl-CommonInformation        DL-CommonInformation    OPTIONAL,
        dl-PDSCH-Information        DL-PDSCH-Information    OPTIONAL,
        modeSpecificPhysChInfo     CHOICE {
            fdd                     SEQUENCE {
                cpch-SetInfo        CPCH-SetInfo              OPTIONAL
            },
            tdd                     NULL
        },
        dl-InformationPerRL-List    DL-InformationPerRL-List OPTIONAL,
-- Extension mechanism
        non-Release99-Information  SEQUENCE {}              OPTIONAL
    }

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

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

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

RRCConnectionReEstablishmentComplete ::= SEQUENCE {
-- User equipment IEs
    ul-IntegProtActivationInfo      IntegrityProtActivationInfo    OPTIONAL,
    modeSpecificInfo                CHOICE {
        fdd                         NULL,
        tdd                         SEQUENCE {
            ul-TimingAdvance        UL-TimingAdvance            OPTIONAL
        }
    },
-- TABULAR: The choice above is optional in the tabular definitions,
-- but this does not seem to make much sense. Either the choice should
-- be optional and UL-TimingAdvance mandatory inside the TDD choice,
-- but not both.
-- Radio bearer IEs
    rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo          OPTIONAL,
    rb-WithPDCP-InfoList            RB-WithPDCP-InfoList          OPTIONAL,
-- Extension mechanism
    non-Release99-Information        SEQUENCE {}                    OPTIONAL
}

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

RRCConnectionReEstablishmentRequest ::= SEQUENCE {
-- User equipment IEs
    u-RNTI                          U-RNTI,
    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
    non-Release99-Information        SEQUENCE {}                    OPTIONAL
}

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

```

```

RRCConnectionReject ::= SEQUENCE {
  -- User equipment IEs
  initialUE-Identity      InitialUE-Identity,
  rejectionCause          RejectionCause,
  waitTime                WaitTime,
  redirectionInfo         RedirectionInfo
  -- Extension mechanism
  non-Release99-Information SEQUENCE {}
}

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

RRCConnectionRelease ::= SEQUENCE {
  -- User equipment IEs
  rrc-MessageTX-Count    RRC-MessageTX-Count OPTIONAL,
  -- The IE above is conditional on the UE state.
  releaseCause           ReleaseCause,
  -- Extension mechanism
  non-Release99-Information SEQUENCE {}
}

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

RRCConnectionReleaseComplete ::= SEQUENCE {
  -- Extension mechanism
  non-Release99-Information SEQUENCE {}
}

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

RRCConnectionRequest ::= SEQUENCE {
  -- User equipment IEs
  initialUE-Identity      InitialUE-Identity,
  initialUE-Capability    InitialUE-Capability,
  establishmentCause      EstablishmentCause,
  protocolErrorIndicator  ProtocolErrorIndicator,
  -- Measurement IEs
  measuredResultsOnRACH   MeasuredResultsOnRACH OPTIONAL,
  -- Extension mechanism
  non-Release99-Information SEQUENCE {}
}

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

RRCConnectionSetup ::= SEQUENCE {
  -- User equipment IEs
  initialUE-Identity      InitialUE-Identity,
  activationTime          ActivationTime OPTIONAL,
  new-U-RNTI              U-RNTI,
  new-c-RNTI              C-RNTI OPTIONAL,
  utran-DRX-CycleLengthCoeff DRX-CycleLengthCoefficient,
  re-EstablishmentTimer   Re-EstablishmentTimer OPTIONAL,
  capabilityUpdateRequirement CapabilityUpdateRequirement OPTIONAL,
  -- 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,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                OPTIONAL
    }

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

RRCConnectionSetupComplete ::= SEQUENCE {
    -- User equipment IEs
        hyperFrameNumber                HyperFrameNumber,
        ue-RadioAccessCapability         UE-RadioAccessCapability,
        ue-SystemSpecificCapability     InterSystemMessage          OPTIONAL,
    -- Extension mechanism
        non-Release99-Information        SEQUENCE {}                OPTIONAL
    }

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

RRCStatus ::= SEQUENCE {
    -- Other IEs
        protocolErrorInformation         ProtocolErrorInformation,
    -- Extension mechanism
        non-Release99-Information        SEQUENCE {}                OPTIONAL
    }

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

SecurityModeCommand ::= SEQUENCE {
    -- User equipment IEs
        cipheringAlgorithm               CipheringAlgorithm,
        cipheringModeInfo                CipheringModeInfo           OPTIONAL,
        integrityProtectionModeInfo      IntegrityProtectionModeInfo OPTIONAL,
    -- Core network IEs
        cn-DomainIdentity                CN-DomainIdentity,
    -- Extension mechanism
        non-Release99-Information        SEQUENCE {}                OPTIONAL
    }

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

SecurityModeComplete ::= SEQUENCE {
    -- User equipment IEs
        hyperFrameNumber                HyperFrameNumber           OPTIONAL,
        ul-IntegProtActivationInfo       IntegrityProtActivationInfo OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo     RB-ActivationTimeInfoList  OPTIONAL,
    -- Extension mechanism
        non-Release99-Information        SEQUENCE {}                OPTIONAL
    }

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

SecurityModeFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                     FailureCauseWithProtErr,

```

```

-- Extension mechanism
  non-Release99-Information      SEQUENCE {}                OPTIONAL
}

```

```

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

```

```

SignallingConnectionRelease ::= SEQUENCE {
  -- Core network IEs
  signallingFlowInfoList      SignallingFlowInfoList,
  -- Extension mechanism
  non-Release99-Information    SEQUENCE {}                OPTIONAL
}

```

```

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

```

```

SystemInformation-BCH ::= SEQUENCE {
  -- Other information elements
  modeSpecificInfo            CHOICE {
    fdd                       SFN-Prime,
    tdd                       NULL
  },
  payload                     CHOICE {
    firstSegment              FirstSegment,
    subsequentSegment         SubsequentOrLastSegment,
    lastSegment               SubsequentOrLastSegment,
    lastAndComplete           SEQUENCE {
      completeSIB-List       CompleteSIB-List,
      lastSegment            SubsequentOrLastSegment
    },
    completeSIB-List          CompleteSIB-List,
    spare                     NULL
  }
}

```

```

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

```

```

SystemInformation-FACH ::= SEQUENCE {
  -- Other information elements
  payload                     CHOICE {
    firstSegment              FirstSegment,
    subsequentSegment         SubsequentOrLastSegment,
    lastSegment               SubsequentOrLastSegment,
    lastAndComplete           SEQUENCE {
      completeSIB-List       CompleteSIB-List,
      lastSegment            SubsequentOrLastSegment
    },
    completeSIB-List          CompleteSIB-List,
    spare                     NULL
  }
}

```

```

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

```

```

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

```

```

-- *****
--

```

```

-- Subsequent or last segment
--
-- *****

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

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

CompleteSIB-List ::=                SEQUENCE (SIZE(1..16)) OF
                                     CompleteSIB

CompleteSIB ::=                     SEQUENCE {
-- Other information elements
    sib-Type                SIB-Type,
    sib-Content              SIB-Content
}

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

SystemInformationChangeIndication ::= SEQUENCE {
-- Other IEs
    bcch-ModificationInfo    BCCH-ModificationInfo,
-- Extension mechanism
    non-Release99-Information SEQUENCE {}           OPTIONAL
}

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

TransportChannelReconfiguration ::= 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  DRX-CycleLengthCoefficient    OPTIONAL,
    re-EstablishmentTimer       Re-EstablishmentTimer           OPTIONAL,
-- Core network IEs
    cn-InformationInfo          CN-InformationInfo                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
        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,
    dl-CommonInformation         DL-CommonInformation          OPTIONAL,
    dl-PDSCH-Information         DL-PDSCH-Information          OPTIONAL,
    modeSpecificPhysChInfo       CHOICE {

```

```

        fdd                SEQUENCE {
            cpch-SetInfo    CPCH-SetInfo                OPTIONAL
        },
        tdd                NULL
    },
    dl-InformationPerRL-List DL-InformationPerRL-List    OPTIONAL,
-- Extension mechanism
    non-Release99-Information SEQUENCE {}                OPTIONAL
}

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

TransportChannelReconfigurationComplete ::= SEQUENCE {
-- User equipment IEs
    ul-IntegProtActivationInfo IntegrityProtActivationInfo    OPTIONAL,
    modeSpecificInfo          CHOICE {
        fdd                    NULL,
        tdd                    SEQUENCE {
            ul-TimingAdvance    UL-TimingAdvance                OPTIONAL
        }
    },
-- Radio bearer IEs
    rb-UL-CiphActivationTimeInfo RB-ActivationTimeInfo        OPTIONAL,
    rb-WithPDCP-InfoList        RB-WithPDCP-InfoList            OPTIONAL,
-- Extension mechanism
    non-Release99-Information    SEQUENCE {}                OPTIONAL
}

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

TransportChannelReconfigurationFailure ::= SEQUENCE {
-- User equipment IEs
    failureCause              FailureCauseWithProtErr,
-- Extension mechanism
    non-Release99-Information    SEQUENCE {}                OPTIONAL
}

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

TransportFormatCombinationControl ::= SEQUENCE {
    channelRequirement        CHOICE {
        dpch-TFCS-InUplink      TFC-Subset,
        tfc-ControlDuration      TFC-ControlDuration
    },
-- Extension mechanism
    non-Release99-Information    SEQUENCE {}                OPTIONAL
}

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

TransportFormatCombinationControlFailure ::= SEQUENCE {
-- User equipment IEs
    failureCause              FailureCauseWithProtErr,
-- Extension mechanism
    non-Release99-Information    SEQUENCE {}                OPTIONAL
}

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

```

```

UECapabilityEnquiry ::= SEQUENCE {
    -- User equipment IEs
    capabilityUpdateRequirement    CapabilityUpdateRequirement,
    -- Extension mechanism
    non-Release99-Information      SEQUENCE {}                OPTIONAL
}

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

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
    ue-RadioAccessCapability      UE-RadioAccessCapability    OPTIONAL,
    -- Other IEs
    ue-SystemSpecificCapability    InterSystemMessage        OPTIONAL,
    -- Extension mechanism
    non-Release99-Information      SEQUENCE {}                OPTIONAL
}

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

UECapabilityInformationConfirm ::= SEQUENCE {
    -- Extension mechanism
    non-Release99-Information      SEQUENCE {}                OPTIONAL
}

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

UplinkDirectTransfer ::= SEQUENCE {
    -- Core network IEs
    flowIdentifier                 FlowIdentifier,
    nas-Message                    NAS-Message,
    -- Measurement IEs
    measuredResultsOnRACH          MeasuredResultsOnRACH    OPTIONAL,
    -- Extension mechanism
    non-Release99-Information      SEQUENCE {}                OPTIONAL
}

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

UplinkPhysicalChannelControl ::= SEQUENCE {
    -- Physical channel IEs
    ccTrCH-PowerControlInfo        CcTrCH-PowerControlInfo    OPTIONAL,
    timingAdvance                  UL-TimingAdvance           OPTIONAL,
    individualTS-InterferenceList   IndividualTS-InterferenceList OPTIONAL,
    rach-ConstantValue              ConstantValue               OPTIONAL,
    dpch-ConstantValue              ConstantValue               OPTIONAL,
    usch-ConstantValue              ConstantValue               OPTIONAL,
    -- Extension mechanism
    non-Release99-Information      SEQUENCE {}                OPTIONAL
}

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

URAUUpdate ::= SEQUENCE {
    -- User equipment IEs
    u-RNTI                          U-RNTI,
    ura-UpdateCause                 URA-UpdateCause,

```

```

        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
-- Extension mechanism
        non-Release99-Information       SEQUENCE {}                                OPTIONAL
}

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

URAUUpdateConfirm ::= 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     DRX-CycleLengthCoefficient,
-- 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
        non-Release99-Information       SEQUENCE {}                                OPTIONAL
}

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

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

END

```

11.3 Information element definitions

11.3.1 Core network information elements

CoreNetwork-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

DRX-CycleLengthCoefficient
FROM UserEquipment-IEs

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

maxCNdomains,
maxFlowID,
maxNoCNdomains
FROM Constant-definitions;

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

CN-DomainInformation ::= SEQUENCE {

```

    cn-DomainIdentity          CN-DomainIdentity,
    cn-DomainSpecificNAS-Info  NAS-SystemInformationGSM-MAP
}

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

CN-DomainSysInfo ::= SEQUENCE {
    cn-DomainIdentity          CN-DomainIdentity,
    cn-Type                    CHOICE {
        gsm-MAP                NAS-SystemInformationGSM-MAP,
        ansi-41                NAS-SystemInformationANSI-41
    },
    cn-DRX-CycleLengthCoeff    DRX-CycleLengthCoefficient
}

CN-DomainSysInfoList ::= SEQUENCE (SIZE (1..maxCNDomains)) OF
                          CN-DomainSysInfo

CN-InformationInfo ::= SEQUENCE {
    plmn-Identity              PLMN-Identity          OPTIONAL,
    cn-CommonGSM-MAP-NAS-SysInfo NAS-SystemInformationGSM-MAP  OPTIONAL,
    cn-DomainInformationList    CN-DomainInformationList  OPTIONAL
}

Digit ::= INTEGER (0..9)

FlowIdentifier ::= INTEGER (0..15)

IMEI ::= SEQUENCE (SIZE (15)) OF
        Digit

IMSI-GSM-MAP ::= SEQUENCE (SIZE (6..15)) OF
                 Digit

LAI ::= SEQUENCE {
    plmn-Identity          PLMN-Identity,
    lac                    BIT STRING (SIZE (16))
}

MCC ::= SEQUENCE (SIZE (3)) OF
       Digit

MNC ::= SEQUENCE (SIZE (2..3)) OF
       Digit

NAS-Message ::= OCTET STRING (SIZE (1..4095))

NAS-SystemInformationGSM-MAP ::= OCTET STRING (SIZE (1..8))

P-TMSI-GSM-MAP ::= BIT STRING (SIZE(32))

PagingRecordTypeID ::= ENUMERATED {
    imsi-GSM-MAP,
    tmsi-GSM-MAP-P-TMSI,
    imsi-DS-41,
    tmsi-DS-41 }

PLMN-Identity ::= SEQUENCE {
    mcc          MCC,
    mnc          MNC
}

PLMN-Type ::= CHOICE {
    gsm-MAP          SEQUENCE {
        plmn-Identity
    },
    ansi-41          SEQUENCE {
        p-REV,
        min-P-REV,
        sid,
        nid
    },
    gsm-MAP-and-ANSI-41 SEQUENCE {
        plmn-Identity,
        p-REV,
        min-P-REV,
        sid,

```

```

        nid
    },
    spare
}

RAB-Identity ::=
    gsm-MAP-RAB-Identity
    ansi-4l-RAB-Identity
}

RAI ::=
    lai
    rac
}

RoutingAreaCode ::=
    BIT STRING (SIZE (8))

ServiceDescriptor ::=
    gsm-MAP
    ansi-4l
}

SignallingFlowInfo ::=
    flowIdentifier
}

SignallingFlowInfoList ::=
    SEQUENCE (SIZE (1..maxFlowID)) OF
        SignallingFlowInfo

TMSI-GSM-MAP ::=
    BIT STRING (SIZE(32))

END

```

11.3.2 UTRAN mobility information elements

UTRANMobility-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

[HCS-ServingCellInformation](#)
[FROM Measurement-IEs](#)

```

    maxIntervals,
    maxRAT,
    maxURAccount
FROM Constant-definitions;

AccessClassBarred ::=
    ENUMERATED {
        barred, notBarred }

AccessClassBarredList ::=
    SEQUENCE (SIZE (16)) OF
        AccessClassBarred

CellAccessRestriction ::=
    SEQUENCE {
        cellBarred
        accessClassBarredList
        cellReservedForOperatorUse
        cellReservedForSOLSA
        ReservedIndicator
    }

CellBarred ::=
    CHOICE {
        barred
        notBarred
        NULL
    }

CellIdentity ::=
    BIT STRING (SIZE (28))

CellSelectQualityMeasure ::=
    ENUMERATED {
        cpich-Ec-N0, cpich-SIR }

CellSelectReselectInfo ::=
    SEQUENCE {
        mappingInfo
        modeSpecificInfo
        fdd
        cellSelectQualityMeasure
        s-Intrasearch
    }
    CHOICE {
        CHOICE {
            SEQUENCE {
                CellSelectQualityMeasure,
                S-SearchFDD
            }
        }
    }
    OPTIONAL,

```



```

        s-Intersearch          S-SearchFDD          OPTIONAL,
        s-SearchHCS            S-SearchFDD          OPTIONAL,
        rat-List               RAT-FDD-InfoList          OPTIONAL
    },
    tdd                        SEQUENCE {
        s-Intrasearch          S-SearchTDD          OPTIONAL,
        s-Intersearch          S-SearchTDD          OPTIONAL,
        s-SearchHCS            S-SearchTDD          OPTIONAL,
        rat-List               RAT-TDD-InfoList          OPTIONAL
    }
},
q-Hyst-S                      Q-Hyst-S,
t-Reselection-S              T-Reselection-S,
hcs-ServingCellInformation    HCS-ServingCellInformation    OPTIONAL,
cellSelectReselectParams      CellSelectReselectParams      OPTIONAL
}

CellSelectReselectParams ::= SEQUENCE {
    decodingRange              DecodingRange          OPTIONAL,
    q-Offset-S                 Q-Offset-S          OPTIONAL,
    offsetExp                   OffsetExp          OPTIONAL
}

-- **TODO**, not defined
DecodingRange ::= SEQUENCE {


-- **TODO**, not defined yet
HCS-ServingCellInformation ::= SEQUENCE {
}


MapParameter1 ::= INTEGER (0..15)

MapParameter2 ::= INTEGER (0..15)

Mapping ::= SEQUENCE {
    rat                        RAT,
    mappingFunctionParameterList MappingFunctionParameterList
}

MappingFunctionParameter ::= SEQUENCE {
    functionType              MappingFunctionType,
    mapParameter1             MapParameter1,
    mapParameter2             MapParameter2,
    upperLimit                 UpperLimit          OPTIONAL
}

MappingFunctionParameterList ::= SEQUENCE (SIZE (1..maxIntervals)) OF
    MappingFunctionParameter

MappingFunctionType ::= ENUMERATED {
    linear,
    functionType2,
    functionType3,
    functionType4 }

MappingInfo ::= SEQUENCE {
    mappingList                MappingList
}

MappingList ::= SEQUENCE (SIZE (1..maxRAT)) OF
    Mapping

-- **TODO**, not defined
OffsetExp ::= SEQUENCE {

-- Actual value = IE value * 2
Q-Hyst-S ::= INTEGER (0..20)


Q-Offset ::= SEQUENCE {
    q-Offset-S                 Q-Offset-S,
    offsetExp                   OffsetExp
}


-- **TODO**, not defined
Q-Offset-S ::= SEQUENCE {}
    
```

```

RAT ::=
    ENUMERATED {
        ultra-FDD,
        ultra-TDD,
        gsm,
        cdma2000 }

RAT-FDD-Info ::=
    rat-Identifier
    s-SearchRAT
    s-HCS-RAT
    }
    SEQUENCE {
        RAT-Identifier,
        S-SearchFDD,
        S-SearchFDD
    } OPTIONAL

RAT-FDD-InfoList ::=
    SEQUENCE (SIZE (1..maxRAT)) OF
        RAT-FDD-Info

RAT-Identifier ::=
    ENUMERATED {
        gsm, cdma2000 }

RAT-TDD-Info ::=
    rat-Identifier
    s-SearchRAT
    s-HCS-RAT
    }
    SEQUENCE {
        RAT-Identifier,
        S-SearchTDD
        S-SearchTDD
    } OPTIONAL,
    OPTIONAL

RAT-TDD-InfoList ::=
    SEQUENCE (SIZE (1..maxRAT)) OF
        RAT-TDD-Info

ReservedIndicator ::=
    ENUMERATED {
        reserved,
        notReserved }

-- Actual value = IE value * 2
S-SearchFDD ::=
    INTEGER (-16..10)

-- Actual value = IE value * 5
S-SearchTDD ::=
    INTEGER (-24..18)

T-Barred ::=
    INTEGER (0..63)

T-Reselection-S ::=
    INTEGER (0..31)

UpperLimit ::=
    INTEGER (0..15)

URA-Identity ::=
    BIT STRING (SIZE (16))

URA-IdentityList ::=
    SEQUENCE (SIZE (1..maxURAccount)) OF
        URA-Identity

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
FROM PhysicalChannel-IEs

```

```

    InterSystemInfo
FROM Measurement-IEs

```

```

    ProtocolErrorInformation
FROM Other-IEs

```

```

maxAlgoTypeCount,
maxDRAC-Classes,
maxFrequencyBandsCount,
maxNoSystemCapability,
maxRAT-Count,
pageCount
FROM Constant-definitions;

ActivationTime ::=                               INTEGER (0..255)

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,
    spare1, spare2, spare3 }

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

CipherringAlgorithm ::=                       ENUMERATED {
    standardUEA1,
    spare1, spare2, spare3, spare4,
    spare5, spare6, spare7, spare8,
    spare9, spare10, spare11, spare12,
    spare13, spare14, spare15 }

CipherringModeCommand ::=                     CHOICE {
    startRestart                               CipherringAlgorithm,
    stopCipherring                             NULL
}

CipherringModeInfo ::=                       SEQUENCE {
    cipherringModeCommand                     CipherringModeCommand,
    -- TABULAR: The cipherring algorithm is included in
    -- the CipherringModeCommand.
    activationTimeForDPCH                     ActivationTime                       OPTIONAL,
    rb-DL-CiphActivationTimeInfo              RB-ActivationTimeInfoList           OPTIONAL
}

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,
    spare                                      NULL
}

CompressedModeMeasCapability ::=              SEQUENCE {
    fdd-Measurements                          BOOLEAN,
    tdd-Measurements                          BOOLEAN,
    gsm-Measurements                          GSM-Measurements,
    multiCarrierMeasurements                  BOOLEAN
}

ConformanceTestCompliance ::=                 ENUMERATED {
    r99,
    spare1, spare2, spare3, spare4,

```

```

        spare5, spare6, spare7 }

CPCCH-Parameters ::=
    initialPriorityDelayList
    backoffControlParams
}

DL-PhysChCapabilityFDD ::=
    maxSimultaneousCCTrCH-Count
    maxNoDPCH-PDSCH-Codes
    maxNoPhysChBitsReceived
    supportForSF-512
    supportOfPDSCH
    simultaneousSCCPCH-DPCH-Reception
}

DL-PhysChCapabilityTDD ::=
    maxSimultaneousCCTrCH-Count
    maxTS-PerFrame
    maxPhysChPerFrame
    minimumSF
    supportOfPDSCH
}

DL-TransChCapability ::=
    maxNoBitsReceived
    maxConvCodeBitsReceived
    turboDecodingSupport
    maxSimultaneousTransChs
    maxReceivedTransportBlocks
    maxNumberOfTFC-InTFCS
    maxNumberOfTF
}

DRAC-SysInfo ::=
    transmissionProbability
    maximumBitRate
}

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

DRX-CycleLengthCoefficient ::=
    INTEGER (2..12)

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

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

EstablishmentCause ::=
    ENUMERATED {
        originatingSpeechCall,
        originatingCS-DataCall,
        originatingPS-DataCall,
        terminatingSpeechCall,
        terminatingCS-DataCall,
        terminatingPS-DataCall,
        emergencyCall,
        interSystemCellReselection,
        locationUpdate,
        imsi-Detach,
        sms,
        callRe-establishment,
        unspecified,
        spare1, spare2, spare3 }

FailureCauseWithProtErr ::=
    CHOICE {
        configurationUnacceptable
        physicalChannelFailure
        incompatibleSimultaneousReconfiguration
        protocolError
        spare
    }

GSM-Measurements ::=
    SEQUENCE {

```

```

    gsm900                BOOLEAN,
    dcs1800               BOOLEAN,
    gsm1900               BOOLEAN
}

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

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 (8)) OF
                                NS-IP

InitialUE-Capability ::=      SEQUENCE {
    maximumAM-EntityNumber  MaximumAM-EntityNumber
}

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,
    spare                    NULL
}

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

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

IntegrityProtectionAlgorithm ::= ENUMERATED {
    standardUIA1,
    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
    },
    spare                            NULL
}

IntegrityProtectionModeInfo ::= SEQUENCE {
    integrityProtectionModeCommand  IntegrityProtectionModeCommand,
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialisation 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
}

MaximumAM-EntityNumber ::=      ENUMERATED {

```

```

        am-2to3,
        am-4to8,
        am-16to32,
        spare1 }

MaximumAM-EntityNumberRLC-Cap ::= ENUMERATED {
        am2, am3, am4, am8, am16, am32,
        spare1, spare2 }

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

MaxNoDPDCH-BitsTransmitted ::= ENUMERATED {
        b150, b300, b600, b1200, b2400,
        b4800, b9600, b19200, b28800, b38400,
        b48000, b57600,
        spare1, spare2, spare3, spare4 }

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

MaxNoPhysChBitsReceived ::= ENUMERATED {
        b300, b600, b1200, b2400, b4800,
        b9600, b19200, b28800, b38400,
        b48000, b57600, b67200,
        spare1, spare2, spare3, spare4 }

MaxNoSCCPCH-RL ::= ENUMERATED {
        r11, 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
MaxPhysChPerFrame ::= INTEGER (1..224)

MaxPhysChPerTimeslot ::= ENUMERATED {
        ts1, ts2 }

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 ::=                       ENUMERATED {
    gsm, multicarrier,
    spare1, spare2 }

MultiRAT-CapabilityList ::=                   SEQUENCE (SIZE (1..maxRAT-Count)) OF
    MultiRAT-Capability

N-300 ::=                                     INTEGER (1..8)
N-302 ::=                                     INTEGER (1..8)
N-303 ::=                                     INTEGER (1..8)
N-304 ::=                                     INTEGER (1..8)
N-310 ::=                                     INTEGER (1..8)
N-312 ::=                                     ENUMERATED {
    s1, s50, s100, s200, s400,
    s600, s800, s1000 }
N-313 ::=                                     ENUMERATED {
    s1, s50, s100, s200, s400,
    s600, s800, s1000 }
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 {
    terminatingSpeechCall,
    terminatingCS-DataCall,

```

```

        terminatingPS-DataCall,
        sms,
        unspecified,
        spare1, spare2, spare3 }

PagingRecord ::=
    cn-Page
        pagingCause
        cn-DomainIdentity
        cn-pagedUE-Identity
    },
    utran-Page
        u-RNTI
    }

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

PDCP-Capability ::=
    losslessSRNS-RelocationSupport
    supportedHC-AlgoTypeList
}

PhysicalChannelCapability ::=
    modeSpecificInfo
        fdd
            downlinkPhysChCapability
            uplinkPhysChCapability
        },
        tdd
            downlinkPhysChCapability
            uplinkPhysChCapability
        }
    }

ProtocolErrorCause ::=
    ENUMERATED {
        transferSyntaxError,
        messageTypeNonexistent,
        messageNotCompatibleWithReceiverState,
        ie-ValueNotComprehended,
        messageExtensionNotComprehended,
        spare1, spare2, spare3 }

ProtocolErrorIndicator ::=
    ENUMERATED {
        noError, errorOccurred }

ProtocolErrorIndicatorWithInfo ::= CHOICE {
    noError
        NULL,
    errorOccurred
        ProtocolErrorInformation
}

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

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

Re-EstablishmentTimer ::=
    t-314
        T-314,
    t-315
        T-315
}

RedirectionInfo ::=
    frequencyInfo
    interSystemInfo
    spare
}

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

ReleaseCause ::=
    ENUMERATED {
        normalEvent,

```



```

        unspecified,
        pre-emptiveRelease,
        congestion,
        re-establishmentReject,
        spare1, spare2, spare3 }

RF-Capability ::=
    modeSpecificInfo
    fdd
        ue-PowerClass
        txRxFrequencySeparation
    },
    tdd
        ue-PowerClass
        radioFrequencyBandList
        chipRateCapability
    }
}

RFC2507 ::=
    maximumMaxHeader
    maximumTCP-Space
    maximumNonTCP-Space
}

RLC-Capability ::=
    totalRLC-AM-BufferSize
    maximumAM-EntityNumber
}

RLC-ReconfigurationIndicator ::= BOOLEAN

RRC-MessageSequenceNumberList ::= SEQUENCE (SIZE (2..3)) OF
    RRC-MessageSequenceNumber

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

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

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

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

SecurityCapability ::= SEQUENCE {
    cipheringAlgorithm
    integrityProtectionAlgorithm
}

SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported
    supported
}

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

SupportedHC-AlgoType ::= CHOICE {
    rfc2507
    spare
}

SupportedHC-AlgoTypeList ::= SEQUENCE (SIZE (1..maxAlgoTypeCount)) OF
    SupportedHC-AlgoType

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

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

T-300 ::= INTEGER (1..8)

T-301 ::= INTEGER (1..8)

T-302 ::= INTEGER (1..8)

```

```

T-303 ::= INTEGER (1..8)
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, s10, s20, s30, s60,
    s180, s600, s1200, s1800 }
T-315 ::= ENUMERATED {
    s0, s50, s100, s200, s400,
    s600, s800, s1000 }
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 {

```

<pre> srnc-Identity s-RNTI } U-RNTI-Short ::= srnc-Identity s-RNTI-2 } UE-ConnTimersAndConstants ::= t-301 t-302 n-302 t-303 n-303 t-304 n-304 t-305 t-306 t-307 t-308 t-309 t-310 n-310 t-311 t-312 n-312 t-313 n-313 t-314 t-315 n-315 } UE-IdleTimersAndConstants ::= t-300 n-300 t-312 n-312 } UE-MultiModeRAT-Capability ::= multiRAT-CapabilityList multiModeCapability } UE-PowerClass ::= } UE-RadioAccessCapability ::= conformanceTestCompliance pdcp-Capability rlc-Capability transportChannelCapability rf-Capability physicalChannelCapability ue-MultiModeRAT-Capability securityCapability lcs-Capability modeSpecificInfo fdd measurementCapability }, tdd } } UL-PhysChCapabilityFDD ::= maxNoDPDCH-BitsTransmitted supportOfPCPCH } UL-PhysChCapabilityTDD ::= maxSimultaneousCCTrCH-Count maxTS-PerFrame maxPhysChPerTimeslot minimumSF supportOfPUSCH } </pre>	<pre> SRNC-Identity, S-RNTI } SEQUENCE { SRNC-Identity, S-RNTI-2 } SEQUENCE { T-301, T-302, N-302, T-303, N-303, T-304, N-304, T-305, T-306, T-307, T-308, T-309, T-310, N-310, T-311, T-312, N-312, T-313, N-313, T-314, T-315, N-315 } SEQUENCE { T-300, N-300, T-312, N-312 } SEQUENCE { MultiRAT-CapabilityList MultiModeCapability } INTEGER (1..4) SEQUENCE { ConformanceTestCompliance, PDCP-Capability, RLC-Capability, TransportChannelCapability, RF-Capability, PhysicalChannelCapability, UE-MultiModeRAT-Capability, SecurityCapability, LCS-Capability, CHOICE { SEQUENCE { MeasurementCapability }, NULL } } SEQUENCE { MaxNoDPDCH-BitsTransmitted, BOOLEAN } SEQUENCE { MaxSimultaneousCCTrCH-Count, MaxTS-PerFrame, MaxPhysChPerTimeslot, MinimumSF-UL, BOOLEAN } </pre>	<pre> OPTIONAL, } </pre>
---	---	--------------------------------------

```

UL-TransChCapability ::=
    maxNoBitsTransmitted
    maxConvCodeBitsTransmitted
    turboDecodingSupport
    maxSimultaneousTransChs
    maxTransmittedBlocks
    maxNumberOfTFC-InTFCS
    maxNumberOfTF
}

SEQUENCE {
    MaxNoBits,
    MaxNoBits,
    TurboSupport,
    MaxSimultaneousTransChsUL,
    MaxTransportBlocksUL,
    MaxNumberOfTFC-InTFCS-UL,
    MaxNumberOfTF
}

URA-UpdateCause ::=
    ENUMERATED {
        changeOfURA,
        periodicURAUpdate,
        re-enteredServiceArea,
        spare1, spare2, spare3,
        spare4, spare5 }

WaitTime ::=
    INTEGER (0..15)

```

END

11.3.4 Radio bearer information elements

RadioBearer-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 CN-DomainIdentity,
 RAB-Identity
FROM CoreNetwork-IEs

 TransportChannelIdentity
FROM TransportChannel-IEs

 algorithmCount,
 maxMuxOptionsCount,
 maxOtherRBcount,
 maxPredefConfigCount,
 maxRABcount,
 maxRB-WithPDCPcount,
 maxRBcount,
 maxReconRBcount,
 maxReconRBs,
 maxRelRBcount,
 maxSetupRBcount,
 maxSRBcount
FROM Constant-definitions;

```

AlgorithmSpecificInfo ::=
    rfc2507-Info
    spare
}

CHOICE {
    RFC2507-Info,
    NULL
}

```

```

DL-AM-RLC-Mode ::=
    inSequenceDelivery
    receivingWindowSize
    receptionRLC-DiscardTimer
    dl-RLC-StatusInfo
}

SEQUENCE {
    BOOLEAN,
    ReceivingWindowSize,
    ReceptionRLC-DiscardTimer
    DL-RLC-StatusInfo
}

```

~~TABULAR: The CV in the specification is unclear which IE does it refer to?~~

~~OPTIONAL,~~

~~OPTIONAL~~

```

DL-LogicalChannelMapping ::=
    dl-TransportChannelType
    transportChannelIdentity
    logicalChannelIdentity
}

SEQUENCE {
    DL-TransportChannelType,
    TransportChannelIdentity
    LogicalChannelIdentity
}

```

OPTIONAL,
OPTIONAL

```

DL-LogicalChannelMappingList ::=
    SEQUENCE (SIZE (1..2)) OF
        DL-LogicalChannelMapping

```

```

DL-RLC-Mode ::=
    dl-AM-RLC-Mode
    dl-UM-RLC-Mode
    dl-TM-RLC-Mode
}

CHOICE {
    DL-AM-RLC-Mode,
    DL-UM-RLC-Mode,
    DL-TM-RLC-Mode
}

```

```

}

DL-RLC-StatusInfo ::=
    timerStatusProhibit
    timerEPC
    missingPU-Indicator
    timerStatusPeriodic
}

DL-TM-RLC-Mode ::=
    inSequenceDelivery
}

DL-TransportChannelType ::=
    ENUMERATED {
        dch, fach, dsch }

DL-UM-RLC-Mode ::=
    inSequenceDelivery
}

ExplicitDiscard ::=
    timerMRW
    timerDiscard
    maxMRW
}

ExpectReordering ::=
    ENUMERATED {
        reorderingNotExpected,
        reorderingExpected }

HeaderCompressionInfo ::=
    reconfigurationReset
    algorithmSpecificInfo
}
-- TABULAR: Optional boolean values are not very efficient.

HeaderCompressionInfoList ::=
    SEQUENCE (SIZE (1..algorithmCount)) OF
        HeaderCompressionInfo

LogicalChannelIdentity ::=
    INTEGER (1..16)

MAC-LogicalChannelPriority ::=
    INTEGER (1..8)

MaxDAT ::=
    ENUMERATED {
        dat1, dat2, dat3, dat4, dat5, dat6,
        dat7, dat8, dat9, dat10, dat15, dat20,
        dat25, dat30, dat35, dat40 }

MaxMRW ::=
    ENUMERATED {
        mm1, mm4, mm6, mm8, mm12, mm16,
        mm24, mm32, spare1, spare2, spare3,
        spare4, spare5, spare6, spare7, spare8 }

MaxRST ::=
    ENUMERATED {
        rst1, rst4, rst6, rst8, rst12,
        rst16, rst24, rst32,
        spare1, spare2, spare3, spare4,
        spare5, spare6, spare7, spare8 }

NoExplicitDiscard ::=
    ENUMERATED {
        dt0-1, dt0-25, dt0-5, dt0-75, dt1,
        dt1-25, dt1-5, dt1-75, dt2, dt2-5,
        dt3, dt3-5, dt4, dt4-5, dt5, dt7-5 }

PDCP-Info ::=
    losslessSRNS-RelocSupport
    pdcp-PDU-Header
    headerCompressionInfoList
}

PDCP-InfoReconfig ::=
    pdcp-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, pw100,
    spare1, spare2, spare3, spare4,
    spare5, spare6, spare7, spare8 }

PredefinedConfigIdentity ::= INTEGER (0..15)

PredefinedConfigValueTag ::= INTEGER (0..15)

PreDefRadioConfiguration ::= SEQUENCE {
    predefinedConfigIdentity PredefinedConfigIdentity,
    predefinedConfigValueTag PredefinedConfigValueTag,
    predefinedRB-Configuration PredefinedRB-Configuration
}

PreDefRadioConfigurationList ::= SEQUENCE (SIZE (1..maxPredefConfigCount)) OF
    PreDefRadioConfiguration

PredefinedRB-Configuration ::= SEQUENCE {
    srb-InformationList SRB-InformationList,
    rb-InformationList RB-InformationList OPTIONAL
}

RAB-Info ::= SEQUENCE {
    rab-Identity RAB-Identity,
    cn-DomainIdentity CN-DomainIdentity
}

RAB-InformationSetup ::= SEQUENCE {
    rab-Info RAB-Info,
    rb-InformationSetupList RB-InformationSetupList
}

RAB-InformationSetupList ::= SEQUENCE (SIZE (1..maxRABcount)) OF
    RAB-InformationSetup

RB-ActivationTimeInfo ::= SEQUENCE {
    rb-Identity RB-Identity,
    rlc-SequenceNumber RLC-SequenceNumber
}

RB-ActivationTimeInfoList ::= SEQUENCE (SIZE (1..maxReconRBs)) OF
    RB-ActivationTimeInfo

RB-Identity ::= INTEGER (0..31)

RB-InformationAffected ::= SEQUENCE {
    rb-Identity RB-Identity,
    rb-MappingInfo RB-MappingInfo
}

RB-InformationAffectedList ::= SEQUENCE (SIZE (1..maxOtherRBcount)) OF
    RB-InformationAffected

```

```

RB-InformationList ::=                SEQUENCE (SIZE (1..maxRBcount)) OF
                                       RB-InformationSetup

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..maxReconRBcount)) OF
                                       RB-InformationReconfig

RB-InformationRelease ::=            SEQUENCE {
  rb-Identity                         RB-Identity
}

RB-InformationReleaseList ::=        SEQUENCE (SIZE (1..maxRelRBcount)) OF
                                       RB-InformationRelease

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..maxSetupRBcount)) OF
                                       RB-InformationSetup

RB-MappingInfo ::=                  SEQUENCE (SIZE (1..maxMuxOptionsCount)) OF
                                       RB-MappingOption

RB-MappingOption ::=                SEQUENCE {
  ul-LogicalChannelMappingList        UL-LogicalChannelMappingList  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..maxRB-WithPDCPcount)) OF
                                       RB-WithPDCP-Info

ReceivingWindowSize ::=              ENUMERATED {
  rw1, rw8, rw16, rw32, rw128, rw256,
  rw512, rw768, rw1024, rw1536, rw2048,
  rw2560, rw3072, rw3584, rw4096, spare1 }

ReceptionRLC DiscardTimer ::=      ENUMERATED {
  dt100, dt250, dt500, dt750, dt1000,
  dt1250, dt1500, dt1750, dt2000, dt2500,
  dt3000, dt3500, dt4000, dt4500,
  dt5000, dt7500 }

RFC2507-Info ::=                    SEQUENCE {
  f-MAX-PERIOD                         INTEGER (1..65535)           OPTIONAL,
  f-MAX-TIME                           INTEGER (1..255)            OPTIONAL,
  max-HEADER                           INTEGER (60..65535)         OPTIONAL,
  tcp-SPACE                             INTEGER (3..255)           OPTIONAL,
  non-TCP-SPACE                         INTEGER (3..65535)         OPTIONAL,
  expectReordering                      ExpectReordering
  -- TABULAR: The IE above has only two possible values, so using Optional
  -- would be wasteful
}

RLC-Info ::=                         SEQUENCE {
  ul-RLC-Mode                          UL-RLC-Mode                OPTIONAL,
  dl-RLC-Mode                          DL-RLC-Mode                OPTIONAL
}

```

```

RLC-InfoChoice ::=
    rlc-Info
    spare
}
CHOICE {
    RLC-Info,
    NULL
}

RLC-SequenceNumber ::=
    INTEGER (0..4095)

SRB-InformationList ::=
    SEQUENCE (SIZE (1..maxSRBcount)) OF
        SRB-InformationSetup

SRB-InformationSetup ::=
    SEQUENCE {
        rb-Identity
        rlc-InfoChoice
        rb-MappingInfo
    }
SEQUENCE {
    RB-Identity,
    RLC-InfoChoice,
    RB-MappingInfo
}

SRB-InformationSetupList2 ::=
    SEQUENCE (SIZE (3..4)) OF
        SRB-InformationSetup

SRB-InformationSetupList ::=
    SEQUENCE (SIZE (1..maxSRBcount)) OF
        SRB-InformationSetup

TimerEPC ::=
    ENUMERATED {
        te50, te100, te150, te200, te250,
        te300, te350, te400, te450, te500,
        te550, te600, te700, te800,
        te900, te1000 }

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 }

TimerMRW ::=
    ENUMERATED {
        tm50, tm100, tm150, tm200, tm250,
        tm300, tm350, tm400, tm450, tm500,
        tm550, tm600, tm700, tm800, tm900, tm1000,
        spare1, spare2, spare3, spare4, spare5,
        spare6, spare7, spare8, spare9, spare10,
        spare11, spare12, spare13, spare14,
        spare15, spare16 }

TimerPoll ::=
    ENUMERATED {
        tp50, tp100, tp150, tp200, tp250,
        tp300, tp350, tp400, tp450, tp500,
        tp550, tp600, tp700, tp800,
        tp900, 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 {
        tpp50, tpp100, tpp150, tpp200, tpp250,
        tpp300, tpp350, tpp400, tpp450, tpp500,
        tpp550, tpp600, tpp700, tpp800,
        tpp900, 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 {
        tsp50, tsp100, tsp150, tsp200, tsp250,
        tsp300, tsp350, tsp400, tsp450, tsp500,
        tsp550, tsp600, tsp700, tsp800,
        tsp900, tsp1000,
        spare1, spare2, spare3, spare4, spare5,
        spare6, spare7, spare8, spare9, spare10,
        spare11, spare12, spare13, spare14,
        spare15, spare16 }

TimerStatusProhibit ::=
    ENUMERATED {
        tsp160, tsp320, tsp640, tsp1280 }

TransmissionRLC-Discard ::=
    CHOICE {
        timerBasedExplicit
            ExplicitDiscard,
        timerBasedNoExplicit
            NoExplicitDiscard,
        maxDAT-Retransmission
            MaxDAT,
        noDiscard
            NULL
    }

TransmissionWindowSize ::=
    ENUMERATED {
        tw1, tw8, tw16, tw32, tw128, tw256,
        tw512, tw768, tw1024, tw1536, tw2048,
        tw2560, tw3072, tw3584, tw4096, spare1 }

UL-AM-RLC-Mode ::=
    SEQUENCE {
        transmissionRLC-Discard
            TransmissionRLC-Discard OPTIONAL,
        transmissionWindowSize
            TransmissionWindowSize,
        timerRST
            TimerRST,
        max-RST
            MaxRST,
        pollingInfo
            PollingInfo OPTIONAL
    }

UL-LogicalChannelMapping ::=
    SEQUENCE {
        ul-TransportChannelType
            UL-TransportChannelType,
        transportChannelIdentity
            TransportChannelIdentity OPTIONAL,
        logicalChannelIdentity
            LogicalChannelIdentity OPTIONAL,
        mac-LogicalChannelPriority
            MAC-LogicalChannelPriority OPTIONAL
    }

UL-LogicalChannelMappingList ::=
    SEQUENCE (SIZE (1..2)) OF
        UL-LogicalChannelMapping

UL-RLC-Mode ::=
    CHOICE {
        ul-AM-RLC-Mode
            UL-AM-RLC-Mode,
        ul-UM-RLC-Mode
            UL-UM-RLC-Mode,
        ul-TM-RLC-Mode
            NULL,
        spare
            NULL
    }

UL-TransportChannelType ::=
    ENUMERATED {
        dch, rach, cpch, usch }

UL-UM-RLC-Mode ::=
    SEQUENCE {
        transmissionRLC-Discard
            TransmissionRLC-Discard OPTIONAL
    }

END

```

11.3.5 Transport channel information elements

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

```
BEGIN
```

```
IMPORTS
```

```

    maxAddTFC-Count,
    maxCPCHsetcount,
    maxCTFC,
    maxCTFC-DCH,
    maxCTFC-DSCH,
    maxDelTFC-Count,
    maxDelTrCHcount,
    maxDL-CCTrCHcount,
    maxDRAC-Classes,
    maxDRACReconAddTrCHcount,

```

```

maxFACHcount,
maxNoTFCI-Groups,
maxReconAddTrCHcount,
maxRM,
maxRstTrCH-Count,
maxTF-Count,
maxTF-Value,
maxTFC-Count,
maxTFC-Value,
maxTFC-Value-1,
maxTFCI-1-Combs,
maxTFCI-2-Combs,
maxTFCI-Value,
maxTFcount,
maxTrCH,
maxTrChCount,
maxTrChValue,
maxUL-CCTrCHcount
FROM Constant-definitions;

AddCTFC-List ::=
    SEQUENCE (SIZE (1..maxAddTFC-Count)) OF
        CTFC

Addition ::=
    SEQUENCE {
        ctfc                CTFC,
        gainFactorInformation GainFactorInformation,
        powerOffsetPp-m     PowerOffsetPp-m
    }

AdditionList ::=
    SEQUENCE (SIZE (1..maxAddTFC-Count)) OF
        Addition

AllowedTFI-List ::=
    SEQUENCE (SIZE (1..maxTF-Count)) OF
        INTEGER (0..maxTF-Value)

AllowedTFC-List ::=
    SEQUENCE (SIZE (1..maxTFC-Count)) OF
        TFC-Value

BitModeRLC-SizeInfo ::=
    CHOICE {
        sizeType1          INTEGER (1..127),
        sizeType2          SEQUENCE {
            part1          INTEGER (0..15),
            part2          INTEGER (1..7)           OPTIONAL
            -- Actual size = (part1 * 8) + 128 + part2
        },
        sizeType3          SEQUENCE {
            part1          INTEGER (0..47),
            part2          INTEGER (1..15)           OPTIONAL
            -- Actual size = (part1 * 16) + 256 + part2
        },
        sizeType4          SEQUENCE {
            part1          INTEGER (0..62),
            part2          INTEGER (1..63)           OPTIONAL
            -- Actual size = (part1 * 64) + 1024 + part2
        }
    }

BLER-QualityValue ::=
    INTEGER (0..63)

ChannelCodingType ::=
    CHOICE {
        noCoding           NULL,
        convolutional      CodingRate,
        turbo              NULL
    }

CodingRate ::=
    ENUMERATED {
        half,
        third }

CommonDynamicTF-Info ::=
    SEQUENCE {
        numberOfTransportBlocks NumberOfTransportBlocks,
        modeSpecificInfo       CHOICE {
            fdd                 SEQUENCE {
                octetModeRLC-SizeInfoType2 OctetModeRLC-SizeInfoType2
            },
            tdd                 SEQUENCE {
                commonTDD-Choice CHOICE {
                    bitModeRLC-SizeInfo BitModeRLC-SizeInfo,

```

```

        }
    }
}

CommonDynamicTF-InfoList ::= SEQUENCE (SIZE (1..maxTFcount)) OF
    CommonDynamicTF-Info

CommonTransChTFS ::= SEQUENCE {
    dynamicTF-InformationList CommonDynamicTF-InfoList,
    semistaticTF-Information SemistaticTF-Information
}

CompleteReconf ::= SEQUENCE {
    ctfc CTFC,
    gainFactorInformation GainFactorInformation,
    powerOffsetPp-m PowerOffsetPp-m
}

CompleteReconfList ::= SEQUENCE (SIZE (1..maxTFC-Count)) OF
    CompleteReconf

ComputedGainFactors ::= SEQUENCE {
    referenceTFC-Number ReferenceTFC-Number
}

ControlledTrChList ::= SEQUENCE (SIZE (1..maxTrChCount)) OF
    TransportChannelIdentity

CPCH-SetID ::= INTEGER (1..maxCPCHsetcount)

CRC-Size ::= ENUMERATED {
    crc0, crc8, crc12, crc16, crc24 }

CTFC-DCH ::= INTEGER (0..maxCTFC-DCH)

CTFC-DSCH ::= INTEGER (0..maxCTFC-DSCH)

CTFC ::= INTEGER (0..maxCTFC)

DedicatedDynamicTF-Info ::= SEQUENCE {
    numberOfTransportBlocks NumberOfTransportBlocks,
    rlcMode CHOICE {
        bitMode BitModeRLC-SizeInfo,
        octetModeType1 OctetModeRLC-SizeInfoType1
    }
} OPTIONAL

DedicatedDynamicTF-InfoList ::= SEQUENCE (SIZE (1..maxTFcount)) OF
    DedicatedDynamicTF-Info

DedicatedTransChTFS ::= SEQUENCE {
    dynamicTF-InformationList DedicatedDynamicTF-InfoList,
    semistaticTF-Information SemistaticTF-Information
}

DeletedDL-TransChInformation ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    modeSpecificInfo CHOICE {
        fdd NULL,
        tdd SEQUENCE {
            dl-DCH-TFCS-Identity TFCS-Identity OPTIONAL
        }
    }
} OPTIONAL

DeletedUL-TransChInformation ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    modeSpecificInfo CHOICE {
        fdd NULL,
        tdd SEQUENCE {
            ul-DCH-TFCS-Identity TFCS-Identity OPTIONAL
        }
    }
} OPTIONAL

DL-AddReconfTransChInfo2List ::= SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF

```

```

DL-AddReconfTransChInformation2
DL-AddReconfTransChInfoList ::= SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF
    DL-AddReconfTransChInformation

DL-AddReconfTransChInformation ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    transportFormatSet TransportFormatSet,
    modeSpecificInfo CHOICE {
        fdd NULL,
        tdd SEQUENCE {
            dl-DCH-TFCS-Identity TFCS-Identity OPTIONAL
        }
    } OPTIONAL,
    dch-QualityTarget QualityTarget OPTIONAL,
    tm-SignallingInfo TM-SignallingInfo OPTIONAL
}

DL-AddReconfTransChInformation2 ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    transportFormatSet TransportFormatSet,
    qualityTarget QualityTarget
}

DL-CommonTransChInfo ::= SEQUENCE {
    sccpch-TFCS TFCS OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd SEQUENCE {
            dl-DCH-TFCS TFCS OPTIONAL
        },
        tdd SEQUENCE {
            individualDL-CCTrCH-InfoList IndividualDL-CCTrCH-InfoList OPTIONAL
        }
    }
}

DL-DeletedTransChInfoList ::= SEQUENCE (SIZE (1..maxDelTrCHcount)) OF
    DL-DeletedDL-TransChInformation

DL-DeletedTransChInformation ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    modeSpecificInfo CHOICE {
        fdd NULL,
        tdd SEQUENCE {
            dl-DCH-TFCS-Identity TFCS-Identity OPTIONAL
        }
    } OPTIONAL
}

DL-PreDefTrChInfoList ::= SEQUENCE (SIZE (1..maxTrCH)) OF
    DL-PreDefTrChInformation

DL-PreDefTrChInformation ::= SEQUENCE {
    transportChannelIdentity TransportChannelIdentity,
    transportFormatSet TransportFormatSet,
    qualityTarget QualityTarget OPTIONAL,
    tm-SignallingInfo TM-SignallingInfo OPTIONAL
}

DRAC-ClassIdentity ::= INTEGER (1..maxDRAC-Classes)

DRAC-StaticInformation ::= SEQUENCE {
    transmissionTimeValidity TransmissionTimeValidity,
    timeDurationBeforeRetry TimeDurationBeforeRetry,
    drac-ClassIdentity DRAC-ClassIdentity
}

DRAC-StaticInformationList ::= SEQUENCE (SIZE (1..maxDRACReconAddTrCHcount)) OF
    DRAC-StaticInformation

FACH-PCH-Information ::= SEQUENCE {
    transportFormatSet TransportFormatSet,
    ctch-Indicator BOOLEAN
}

FACH-PCH-InformationList ::= SEQUENCE (SIZE (1..maxFACHcount)) OF
    FACH-PCH-Information

```

```

GainFactor ::=                               INTEGER (0..15)

GainFactorInformation ::=                    CHOICE {
  signalledGainFactors                       SignalledGainFactors,
  computedGainFactors                         ComputedGainFactors
}

IndividualDL-CCTrCH-Info ::=                 SEQUENCE {
  dl-DCH-TFCS-Identity                       TFCS-Identity,
  dl-DCH-TFCS                                TFCS
}

IndividualUL-CCTrCH-InfoList ::=            SEQUENCE (SIZE (1..maxUL-CCTrCHcount)) OF
  IndividualUL-CCTrCH-Info

IndividualUL-CCTrCH-Info ::=                 SEQUENCE {
  ul-DCH-TFCS-Identity                       TFCS-Identity,
  ul-DCH-TFCS                                TFCS
}

IndividualDL-CCTrCH-InfoList ::=            SEQUENCE (SIZE (1..maxDL-CCTrCHcount)) OF
  IndividualDL-CCTrCH-Info

-- **TODO**, extensibility?
MessType ::=                                ENUMERATED {
  transportFormatCombinationControl }

Non-allowedTFC-List ::=                     SEQUENCE (SIZE (1..maxTFC-Count)) OF
  INTEGER (0..maxTFC-Value)

NumberOfTransportBlocks ::=                 INTEGER (0..4095)

OctetModeRLC-SizeInfoType1 ::=              CHOICE {
  sizeType1                                  INTEGER (0..31),
  -- Actual size = (8 * sizeType1) + 16
  sizeType2                                  SEQUENCE {
    part1                                    INTEGER (0..23),
    part2                                    INTEGER (1..3)                                OPTIONAL
  },
  -- Actual size = (32 * part1) + 272 + (part2 * 8)
  sizeType3                                  SEQUENCE {
    part1                                    INTEGER (0..61),
    part2                                    INTEGER (1..7)                                OPTIONAL
  },
  -- Actual size = (64 * part1) + 1040 + (part2 * 8)
}

OctetModeRLC-SizeInfoType2 ::=              SEQUENCE {
  sizeType1                                  INTEGER (0..31),
  -- Actual size = (sizeType1 * 8) + 48
  sizeType2                                  INTEGER (0..63),
  -- Actual size = (sizeType2 * 16) + 312
  sizeType3                                  INTEGER (0..56)
  -- Actual size = (sizeType3 *64) + 1384
}

PowerOffsetPp-m ::=                         INTEGER (-5..10)

PreDefTransChConfiguration ::=              SEQUENCE {
  ul-TFCS                                    TFCS                                OPTIONAL,
  ul-AddReconfTrChInfoList                  UL-PreDefTrChInfoList              OPTIONAL,
  dl-TFCS                                    TFCS                                OPTIONAL,
  dl-TrChInfoList                           DL-PreDefTrChInfoList              OPTIONAL,
  modeSpecificInfo                           CHOICE {
    fdd                                       NULL,
    tdd                                       SEQUENCE {
      ul-DCH-TFCS-Identity                    TFCS-Identity                       OPTIONAL,
      dl-DCH-TFCS-Identity                    TFCS-Identity                       OPTIONAL
    }
  }
  -- TABULAR: The two separate choices in tabular have been
  -- combined here.
}

QualityTarget ::=                           SEQUENCE {
  bler-QualityValue                          BLER-QualityValue
}

```

```

RateMatchingAttribute ::=          INTEGER (1..maxRM)

ReferenceTFC-Number ::=          INTEGER (0..15)

Removal ::=                       SEQUENCE {
    tfci                          TFCI
}

RemovalList ::=                  SEQUENCE (SIZE (1..maxDelTFC-Count)) OF
    Removal

RestrictedTrChIdentity ::=        INTEGER (0..maxTrChValue)

RestrictedTrChInfo ::=            SEQUENCE {
    restrictedTrChIdentity          RestrictedTrChIdentity,
    allowedTFI-List                AllowedTFI-List                OPTIONAL
}

RestrictedTrChInfoList ::=        SEQUENCE (SIZE (1..maxRstTrCH-Count)) OF
    RestrictedTrChInfo

SemistaticTF-Information ::=      SEQUENCE {
    transmissionTimeInterval        TransmissionTimeInterval,
    channelCodingType              ChannelCodingType,
    rateMatchingAttribute          RateMatchingAttribute,
    crc-Size                       CRC-Size
}

SignalledGainFactors ::=         SEQUENCE {
    gainFactorBetaC                GainFactor,
    gainFactorBetaD                GainFactor,
    referenceTFC-Number            ReferenceTFC-Number            OPTIONAL
}

TFC-DCH-List ::=                 SEQUENCE (SIZE (1..maxTFCI-1-Combs)) OF
    CTFC-DCH

TFC-DSCH-List ::=               SEQUENCE (SIZE (1..maxTFCI-2-Combs)) OF
    CTFC-DSCH

TFC-MappingOnDSCH ::=           SEQUENCE {
    maxTFCI-Field2Value            INTEGER (1..512),
    ctfc-DSCH                      CTFC-DSCH
}

TFC-MappingOnDSCH-List ::=      SEQUENCE (SIZE (1..maxNoTFCI-Groups)) OF
    TFC-MappingOnDSCH

TFC-Subset ::=                  CHOICE {
    minimumAllowedTFC-Number       TFC-Value,
    allowedTFC-List                AllowedTFC-List,
    non-allowedTFC-List            Non-allowedTFC-List,
    restrictedTrChInfoList         RestrictedTrChInfoList
}

TFC-Value ::=                   INTEGER (0..maxTFC-Value-1)

TFCI ::=                         INTEGER (0..maxTFCI-Value)

TFCI2-Length ::=                INTEGER (1..9)

TFCS ::=                         CHOICE {
    fddWithoutAccessOrTDD          SEQUENCE {
        tfcsRepresentation        CHOICE {
            completeReconfList    CompleteReconfList,
            removalList            RemovalList,
            additionList           AdditionList
        }
    },
    fddWithAccess                  SEQUENCE {
        tfci2-Length              TFCI2-Length,
        tfc-DCH-List              TFC-DCH-List,
        signallingMethod          CHOICE {
            tfci-Range            SEQUENCE {
                tfc-MappingOnDSCH-List TFC-MappingOnDSCH-List
            }
        },
        explicit                   SEQUENCE {

```

```

    }
    }
}

TFC-DSCH-List                                TFC-DSCH-List
}
}

TFCS-Identity ::=
  tfcs-ID                                     SEQUENCE {
  sharedChannelIndicator                       INTEGER (1..8) DEFAULT 1,
  }                                             BOOLEAN

TimeDurationBeforeRetry ::=                  INTEGER (1..256)

TM-SignallingInfo ::=
  transportChannelIdentity                     SEQUENCE {
  tm-SignallingMode                           TransportChannelIdentity,
  model                                        CHOICE {
    messType                                  SEQUENCE {
      }                                       MessType
    },
  mode2                                       SEQUENCE {
    controlledTrChList                       ControlledTrChList
  }
}

TransmissionTimeInterval ::=                 ENUMERATED {
  tti10, tti20, tti40, tti80 }

TransmissionTimeValidity ::=                INTEGER (1..256)

TransportChannelIdentity ::=                 INTEGER (1..64)

TransportFormatSet ::=                       CHOICE {
  dedicatedTransChTFS                         DedicatedTransChTFS,
  commonTransChTFS                             CommonTransChTFS
}

UL-AddReconfTransChInfoList ::=              SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF
  UL-AddReconfTransChInformation

UL-AddReconfTransChInformation ::=           SEQUENCE {
  transportChannelIdentity                     TransportChannelIdentity,
  transportFormatSet                           TransportFormatSet,
  modeSpecificInfo                             CHOICE {
    fdd                                         NULL,
    tdd                                         SEQUENCE {
      ul-DCH-TFCS-Identity                     TFCS-Identity           OPTIONAL
    }
  }
}

UL-CommonTransChInfo ::=                     SEQUENCE {
  tfc-Subset                                   TFC-Subset           OPTIONAL,
  modeSpecificInfo                             CHOICE {
    fdd                                         SEQUENCE {
      ul-DCH-TFCS                             TFCs
    },
    tdd                                         SEQUENCE {
      individualUL-CCTrCH-InfoList             IndividualUL-CCTrCH-InfoList
      ul-DCH-TFCS-Identity                   TFCS-Identity
    }
  }
}

UL-DeletedTransChInfoList ::=                 SEQUENCE (SIZE (1..maxDelTrCHcount)) OF
  DeletedUL-TransChInformation

UL-DeletedTransChInformation ::= SEQUENCE {
  transportChannelIdentity TransportChannelIdentity,
  modeSpecificInfo CHOICE {
    fdd NULL,
    tdd SEQUENCE {
      individualUL-CCTrCH-InfoList IndividualUL-CCTrCH-InfoList
    }
  }
}

```

```

UL-PreDefTrChInfoList ::=          SEQUENCE (SIZE (1..maxTrCH)) OF
                                     UL-PreDefTrChInformation

UL-PreDefTrChInformation ::=       SEQUENCE {
    transportChannelIdentity        TransportChannelIdentity,
    transportFormatSet              TransportFormatSet
}

END

```

11.3.6 Physical channel information elements

```

PhysicalChannel-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    maxAddRLcount,
    maxAP-SigNum,
    maxAP-SubCH,
    maxChanCount,
    maxCodeCount,
    maxCodeNum,
    maxCodeNumComp-1,
    maxCombineSet,
    maxCPCH-SetCount,
    maxDelRLcount,
    maxDPDCHcount,
    maxFACH-Count,
    maxMidambleShift-1,
    maxNoCodeGroups,
    maxNoTFCI-Groups,
    maxPCPCHs,
    maxPDSCHcount,
    maxPRACHcount,
    maxPUSCHcount,
    maxReplaceCount,
    maxRLcount,
    maxSCCPCHcount,
    maxSigNum,
    maxSF-Num,
    maxSubChNum,
    maxTFCI-2-Combs,
    maxTFs,
    maxTimeslotCount,
    maxTScount,
    maxUL-CCTrCHcount
FROM Constant-definitions

    ActivationTime
FROM UserEquipment-IEs

    CPCH-SetID,
    FACH-PCH-InformationList,
    TFCS,
    TFCS-Identity,
    TransportFormatSet
FROM TransportChannel-IEs

    SIB-ReferenceListFACH
FROM Other-IEs;

AC-To-ASC-Mapping ::=              INTEGER (0..7)

AC-To-ASC-MappingTable ::=         SEQUENCE (SIZE (7)) OF
                                     AC-To-ASC-Mapping

AccessServiceClass ::=             SEQUENCE {
    availableSignatureStartIndex    INTEGER (0..15),
    availableSignatureEndIndex      INTEGER (0..15),
    availableSubChannelStartIndex   INTEGER (0..11),
    availableSubChannelEndIndex     INTEGER (0..11)
}

AccessServiceClassIndex ::=        INTEGER (1..8)

```



```

AICH-Info ::=
    secondaryScramblingCode
    channelisationCode256
    sttd-Indicator
    aich-TransmissionTiming
}
SEQUENCE {
    SecondaryScramblingCode
    ChannelisationCode256,
    STTD-Indicator,
    AICH-TransmissionTiming
}
OPTIONAL,

AICH-PowerOffset ::=
    INTEGER (-10..5)

AICH-TransmissionTiming ::=
    ENUMERATED {
        e0, e1
    }

AllocationPeriodInfo ::=
    allocationActivationTime
    allocationDuration
}
SEQUENCE {
    INTEGER (1..256),
    INTEGER (1..256)
}

AP-AICH-ChannelisationCode ::=
    INTEGER (0..255)

AP-AICH-ScramblingCode ::=
    INTEGER (0..255)

AP-PreambleScramblingCode ::=
    INTEGER (0..255)

AP-Signature ::=
    INTEGER (0..15)

AP-Subchannel ::=
    INTEGER (0..11)

ASC ::=
    accessServiceClass
    repetitionPeriodAndOffset
    -- TABULAR: The offset is nested in the repetition period
}
SEQUENCE {
    AccessServiceClass,
    ASC-RepetitionPeriodAndOffset
}
OPTIONAL

ASC-Info ::=
    asc-List
}
SEQUENCE {
    ASC-List
}

ASC-List ::=
    SEQUENCE (SIZE (1..8)) OF
    ASC

ASC-RepetitionPeriodAndOffset ::=
    rp1
    rp2
    rp4
    rp8
}
CHOICE {
    NULL,
    INTEGER (0..1),
    INTEGER (0..3),
    INTEGER (0..7)
}

AvailableAP-SignatureList ::=
    SEQUENCE (SIZE (1..maxAP-SigNum)) OF
    AP-Signature

AvailableAP-SubchannelList ::=
    SEQUENCE (SIZE (1..maxAP-SubCH)) OF
    AP-Subchannel

AvailableMinimumSF-VCAM ::=
    minimumSpreadingFactor
    nF-Max
    maxAvailablePCPCH-Number
    availableAP-SignatureList
    availableAP-SubchannelList
}
SEQUENCE {
    MinimumSpreadingFactor,
    NF-Max,
    MaxAvailablePCPCH-Number,
    AvailableAP-SignatureList,
    AvailableAP-SubchannelList
}
OPTIONAL

AvailableMinimumSF-ListUCSM ::=
    SEQUENCE (SIZE (1..maxSF-Num)) OF
    MinimumSpreadingFactor

AvailableMinimumSF-ListVCAM ::=
    SEQUENCE (SIZE (1..maxSF-Num)) OF
    AvailableMinimumSF-VCAM

AvailableSignatureList ::=
    SEQUENCE (SIZE (1..maxSigNum)) OF
    Signature

AvailableSubChannelNumber ::=
    INTEGER (0..11)

AvailableSubChannelNumberList ::=
    SEQUENCE (SIZE (1..maxSubChNum)) OF
    AvailableSubChannelNumber

BlockSTTD-Indicator ::=
    BOOLEAN

BurstType ::=
    ENUMERATED {

```

```

short1, long2 }

BurstType1 ::= ENUMERATED { ms4, ms8, ms16 }
BurstType2 ::= ENUMERATED { ms3, ms6 }
CCTrCH-PowerControlInfo ::= SEQUENCE {
    tfcs-Identity          TFCS-Identity          OPTIONAL,
    ul-DPCH-PowerControlInfo UL-DPCH-PowerControlInfo
}
CD-AccessSlotSubchannel ::= INTEGER (0..11)
CD-AccessSlotSubchannelList ::= SEQUENCE (SIZE (1..maxSubChNum)) OF
    CD-AccessSlotSubchannel
CD-CA-ICH-ChannelisationCode ::= INTEGER (0..255)
CD-CA-ICH-ScramblingCode ::= INTEGER (0..255)
CD-PreambleScramblingCode ::= INTEGER (0..255)
CD-SignatureCode ::= INTEGER (0..15)
CD-SignatureCodeList ::= SEQUENCE (SIZE (1..maxSigNum)) OF
    CD-SignatureCode
CellParametersID ::= INTEGER (0..127)
CFN ::= INTEGER (0..255)
ChannelAssignmentActive ::= CHOICE {
    notActive          NULL,
    isActive          VCAM-Info
}
ChannelisationCode256 ::= INTEGER (0..255)
ChannelReqParamsForUCSM ::= SEQUENCE {
    availableAP-SignatureList AvailableAP-SignatureList,
    availableAP-SubchannelList AvailableAP-SubchannelList
}
ChannelReqParamsForUCSM-List ::= SEQUENCE (SIZE (1..maxSigNum)) OF
    ChannelReqParamsForUCSM
ClosedLoopTimingAdjMode ::= ENUMERATED {
    slot1, slot2 }
CodeNumber ::= INTEGER (0..maxCodeNum)
CodeNumberDSCH ::= INTEGER (0..maxCodeNumComp-1)
CodeRange ::= SEQUENCE {
    pdsch-CodeMapList PDSCH-CodeMapList,
    codeNumberStart CodeNumberDSCH,
    codeNumberStop CodeNumberDSCH
}
CodeWordSet ::= ENUMERATED {
    longCWS,
    mediumCWS,
    shortCWS,
    ssdtOff }
CommonTimeslotInfo ::= SEQUENCE {
    secondInterleavingMode SecondInterleavingMode OPTIONAL,
    tfci-Coding TFICI-Coding OPTIONAL,
    puncturingLimit PuncturingLimit,
    repetitionPeriodAndLength RepetitionPeriodAndLength OPTIONAL
}
CommonTimeslotInfoSCCPCH ::= SEQUENCE {
    secondInterleavingMode SecondInterleavingMode OPTIONAL,
    tfci-Coding TFICI-Coding OPTIONAL,
    puncturingLimit PuncturingLimit,
    repetitionPeriodLengthAndOffset RepetitionPeriodLengthAndOffset OPTIONAL
}

```

```

CompressedModeMethod ::=
    CHOICE {
        puncturing
        sf-2
        upperLayerScheduling
        noCompressing
    }

-- Values from -10 to 10 are used in Release 99
ConstantValue ::=
    INTEGER (-10..21)

CPCH-PersistenceLevelsList ::=
    SEQUENCE (SIZE (1..maxCPCH-SetCount)) OF
        CPCH-PersistenceLevels

CPCH-PersistenceLevels ::=
    SEQUENCE {
        cpch-SetID
        dynamicPersistenceLevelTF-List
    }

CPCH-SetInfo ::=
    SEQUENCE {
        cpch-SetID
        transportFormatSet
        ap-PreambleScramblingCode
        ap-AICH-ScramblingCode
        ap-AICH-ChannelisationCode
        cd-PreambleScramblingCode
        cd-CA-ICH-ScramblingCode
        cd-CA-ICH-ChannelisationCode
        cd-AccessSlotSubchannelList
        cd-SignatureCodeList
        slotFormat
        n-StartMessage
        channelAssignmentActive
        -- TABULAR: VCAM info has been nested inside ChannelAssignmentActive,
        -- which in turn is mandatory since it's only a binary choice.
        cpch-StatusIndicationMode
        pcpch-ChannelInfoList
    }

CPCH-SetInfoList ::=
    SEQUENCE (SIZE (1..maxCPCH-SetCount)) OF
        CPCH-SetInfo

CPCH-StatusIndicationMode ::=
    ENUMERATED {
        pcpch-Availability,
        pcpch-AvailabilityAndMinAvailableSF }

-- Actual value = IE value * 512, only values from 0 to 599 used in Release 99.
DefaultDPCH-OffsetValue ::=
    INTEGER (0..1023)

-- Actual value = IE value * 0.5
DeltaSIR ::=
    INTEGER (0..15)

DL-CCTrCh ::=
    SEQUENCE {
        individualTS-InfoDL-CCTrCHList
    }

DL-CCTrCh-HO ::=
    SEQUENCE {
        tfcs-Identity
        individualTS-InfoDL-CCTrCHList
    }

DL-CCTrChList ::=
    CHOICE {
        single
        handover
    }

DL-ChannelisationCode ::=
    SEQUENCE {
        secondaryScramblingCode
        codeNumber
    }

DL-ChannelisationCodeList ::=
    SEQUENCE (SIZE(1..maxChanCount)) OF
        DL-ChannelisationCode

DL-CommonInformation ::=
    SEQUENCE {
        dl-DPCH-InfoCommon
        modeSpecificInfo
    }

```

```

    fdd
        defaultDPCH-OffsetValue      SEQUENCE {
        dpch-CompressedModeInfo       DefaultDPCH-OffsetValue  OPTIONAL,
        tx-DiversityMode              DPCH-CompressedModeInfo OPTIONAL,
        ssdt-Information              TX-DiversityMode        OPTIONAL,
    },
    tdd
        ul-TimingAdvance              SSDT-Information        OPTIONAL
    }
}

DL-CommonInformationPredef ::= SEQUENCE {
    dl-DPCH-InfoCommon              DL-DPCH-InfoCommon    OPTIONAL,
    modeSpecificInfo                CHOICE {
        fdd
            defaultDPCH-OffsetValue  SEQUENCE {
                DefaultDPCH-OffsetValue  OPTIONAL
            },
        tdd
            NULL
    }
}

DL-DPCH-SlotFormat ::= ENUMERATED {
    slf0, slf1 }

DL-DPCH-InfoCommon ::= SEQUENCE {
    dl-DPCH-PowerControlInfo        DL-DPCH-PowerControlInfo  OPTIONAL,
    spreadingFactor                  SF-DL-DPCH,
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
    positionFixedOrFlexible          PositionFixedOrFlexible,
    tfci-Existence                   BOOLEAN
}

DL-DPCH-InfoPerRL ::= CHOICE {
    fdd
        pCPICH-UsageForChannelEst     PCPICH-UsageForChannelEst  OPTIONAL,
        secondaryCPICH-Info           SecondaryCPICH-Info        OPTIONAL,
        dl-ChannelisationCodeList     DL-ChannelisationCodeList,
        tpc-CombinationIndex          TPC-CombinationIndex,
        ssdt-CellIdentity              SSDT-CellIdentity          OPTIONAL,
        closedLoopTimingAdjMode       ClosedLoopTimingAdjMode    OPTIONAL
    },
    tdd
        dl-CCTrChList                 DL-CCTrChList
}

DL-DPCH-PowerControlInfo ::= SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd
            dpc-Mode                   DPC-Mode  OPTIONAL
        },
    tdd
        NULL
}

DL-FrameType ::= ENUMERATED {
    dl-FrameTypeA, dl-FrameTypeB }

DL-InfoPerRL ::= SEQUENCE {
    dl-InformationPerRL             DL-InformationPerRL-Short,
    dl-DPCH-InfoPerRL              DL-DPCH-InfoPerRL
}

DL-InfoPerRL-List ::= SEQUENCE (SIZE (1..maxRLcount)) OF
    DL-InfoPerRL

DL-InformationPerRL ::= SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd
            primaryCPICH-Info          PrimaryCPICH-Info,
            pdsch-SHO-DCH-Info        PDSCH-SHO-DCH-Info  OPTIONAL,
            pdsch-CodeMapping         PDSCH-CodeMapping   OPTIONAL
        },
    tdd
        primaryCCPCH-Info             PrimaryCCPCH-Info
    },
}

```

```

dl-DPCH-InfoPerRL          DL-DPCH-InfoPerRL          OPTIONAL,
secondaryCCPCH-Info       SecondaryCCPCH-Info       OPTIONAL,
sib-ReferenceList         SIB-ReferenceListFACH         OPTIONAL
}

DL-InformationPerRL-List ::= SEQUENCE (SIZE (1..maxRLcount)) OF
                             DL-InformationPerRL

DL-InformationPerRL-Short ::= SEQUENCE {
    modeSpecificInfo        CHOICE {
        fdd                  SEQUENCE {
            primaryCPICH-Info PrimaryCPICH-Info
        },
        tdd                  NULL
    },
    dl-DPCH-InfoPerRL       DL-DPCH-InfoPerRL          OPTIONAL
}

DL-OuterLoopControl ::= ENUMERATED {
    increaseAllowed, increaseNotAllowed }

DL-PDSCH-Information ::= SEQUENCE {
    pdsch-SHO-DCH-Info      PDSCH-SHO-DCH-Info          OPTIONAL,
    pdsch-CodeMapping       PDSCH-CodeMapping          OPTIONAL
}

DL-TS-ChannelisationCode ::= ENUMERATED {
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

DL-TS-ChannelisationCodeList ::= SEQUENCE (SIZE (1..maxCodeCount)) OF
    DL-TS-ChannelisationCode

DPC-Mode ::= ENUMERATED {
    singleTPC,
    tpcTripletInSoft }

-- The actual value of DPCCH power offset is the value of this IE * 2.
DPCCH-PowerOffset ::= INTEGER (-82..-3)

DPCH-CompressedModeInfo ::= SEQUENCE {
    tgl                      TGL,
    cfn                      CFN,
    sn                       Timeslot,
    tgp1                     TGP,
    tgp2                     TGP,
    tgd                      TGD,
    pd                       PD,
    pcm                      PCM,
    prn                      PRM,
    ul-DL-Mode              UL-DL-Mode,
    compressedModeMethod     CompressedModeMethod,
    -- TABULAR: Scrambling code change is nested inside CompressedModeMethod
    dl-FrameType            DL-FrameType,
    deltaSIR                DeltaSIR,
    deltaSIRAfter           DeltaSIR
}

DPDCH-ChannelisationCode ::= ENUMERATED {
    e4, e8, e16, e32,
    e64, e128, e256 }

DPDCH-ChannelisationCodeList ::= SEQUENCE (SIZE (1..maxDPDCHcount)) OF
    DPDCH-ChannelisationCode

DSCH-Mapping ::= SEQUENCE {
    maxTFCI-Field2Value     MaxTFCI-Field2Value,
    spreadingFactor         SF-PDSCH,
    codeNumber              CodeNumberDSCH,
    multiCodeInfo           MultiCodeInfo
}

DSCH-MappingList ::= SEQUENCE (SIZE (1..maxNoTFCI-Groups)) OF
    DSCH-Mapping

DSCH-RadioLinkIdentifier ::= INTEGER (0..511)

```

```

DurationTimeInfo ::= INTEGER (1..4096)

DynamicPersistenceLevel ::= INTEGER (1..8)

DynamicPersistenceLevelList ::= SEQUENCE (SIZE (1..maxPRACHcount)) OF
    DynamicPersistenceLevel

DynamicPersistenceLevelTF-List ::= SEQUENCE (SIZE (1..maxTFs)) OF
    DynamicPersistenceLevel

FACH-PCH-Information ::= SEQUENCE {
    transportFormatSet TransportFormatSet,
    ctech-Indicator BOOLEAN
}

FACH-PCH-InformationList ::= SEQUENCE (SIZE(1..maxFACH-Count)) OF
    FACH-PCH-Information

FBI-BitNumber ::= INTEGER (1..2)

FrequencyInfo ::= SEQUENCE {
    modeSpecificInfo CHOICE {
        fdd SEQUENCE {
            uarfcn-UL UARFCN-Nu,
            uarfcn-DL UARFCN-Nd OPTIONAL
        },
        tdd SEQUENCE {
            uarfcn-Nt UARFCN-Nt
        }
    }
}

IndividualTimeslotInfo ::= SEQUENCE {
    timeslotNumber Timeslot,
    tfci-Existence BOOLEAN,
    -- The IE above is CH, but since it is a boolean it's kept mandatory.
    burstType BurstType,
    midambleShift MidambleShift OPTIONAL
}

IndividualTS-InfoDL-CCTrCH ::= SEQUENCE {
    individualTimeslotInfo IndividualTimeslotInfo,
    dl-TS-ChannelisationCodeList DL-TS-ChannelisationCodeList
}

IndividualTS-InfoDL-CCTrCHList ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
    IndividualTS-InfoDL-CCTrCH

IndividualTS-InfoPDSCH ::= SEQUENCE {
    individualTimeslotInfo IndividualTimeslotInfo,
    pdsch-ChannelisationCode PDSCH-ChannelisationCode
}

IndividualTS-InfoPDSCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
    IndividualTS-InfoPDSCH

IndividualTS-InfoPUSCH ::= SEQUENCE {
    individualTimeslotInfo IndividualTimeslotInfo,
    pusch-ChannelisationCode PUSCH-ChannelisationCode
}

IndividualTS-InfoPUSCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
    IndividualTS-InfoPUSCH

IndividualTS-InfoUL-CCTrCH ::= SEQUENCE {
    individualTimeslotInfo IndividualTimeslotInfo,
    channelisationCode UL-TS-ChannelisationCode
}

IndividualTS-InfoUL-CCTrCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
    IndividualTS-InfoUL-CCTrCH

IndividualTS-Interference ::= SEQUENCE {
    timeslot Timeslot,
    ul-TimeslotInterference UL-Interference
}

```

```

IndividualTS-InterferenceList ::= SEQUENCE (SIZE (1..maxTScount)) OF
                                   IndividualTS-Interference

-- Value range of -50..33 is used for Release 99
MaxAllowedUL-TX-Power ::= INTEGER (-50..77)

MaxAvailablePCPCH-Number ::= INTEGER (1..64)

MaxTFCI-Field2Value ::= INTEGER (1..1023)

MidambleConfiguration ::= SEQUENCE {
    burstType1 BurstType1 DEFAULT ms8,
    burstType2 BurstType2 DEFAULT ms3
}

MidambleShift ::= INTEGER (0..maxMidambleShift-1)

MinimumSpreadingFactor ::= ENUMERATED {
    sf4, sf8, sf16, sf32,
    sf64, sf128, sf256 }

MultiCodeInfo ::= INTEGER (1..16)

N-GAP ::= ENUMERATED {
    f2, f4, f8 }

N-PCH ::= INTEGER (1..8)

N-StartMessage ::= INTEGER (1..8)

-- **TODO**, not defined yet
NB01Max ::= SEQUENCE {
}

-- **TODO**, not defined yet
NB01Min ::= SEQUENCE {
}

NF-Max ::= INTEGER (1..64)

NumberOfFBI-Bits ::= INTEGER (1..2)

PagingIndicatorLength ::= ENUMERATED {
    pi2, pi4, pi8 }

PC-Preamble ::= ENUMERATED {
    pcp0, pcp8 }

PC-PreambleSlotFormat ::= ENUMERATED {
    slf0, slf1 }

PCM ::= ENUMERATED {
    pc-mode0, pc-model }

PCP-Length ::= ENUMERATED {
    as0, as8 }

PCPCH-ChannelInfo ::= SEQUENCE {
    pcpch-UL-ScramblingCode INTEGER (0..255),
    pcpch-DL-ChannelisationCode INTEGER (0..511),
    pcpch-DL-ScramblingCode INTEGER (0..255),
    pcp-Length PCP-Length,
    ucsM-Info UCSM-Info OPTIONAL
}

PCPCH-ChannelInfoList ::= SEQUENCE (SIZE (1..maxPCPCHs)) OF
    PCPCH-ChannelInfo

PCPICH-UsageForChannelEst ::= ENUMERATED {
    mayBeUsed,
    shallNotBeUsed }

-- Here the value 0 represents "infinity" in the tabular notation.
PD ::= INTEGER (0..35)

PDSCH-ChannelisationCode ::= ENUMERATED {
    ccl6-1, ccl6-2, ccl6-3, ccl6-4,
    ccl6-5, ccl6-6, ccl6-7, ccl6-8,

```

	cc16-9, cc16-10, cc16-11, cc16-12, cc16-13, cc16-14, cc16-15, cc16-16 }	
PDSCH-CodeInfo ::=	SEQUENCE { spreadingFactor codeNumber multiCodeInfo }	
PDSCH-CodeInfoList ::=	SEQUENCE (SIZE (1..maxTFCI-2-Combs)) OF PDSCH-CodeInfo	
PDSCH-CodeMap ::=	SEQUENCE { spreadingFactor multiCodeInfo }	
PDSCH-CodeMapList ::=	SEQUENCE (SIZE (1..maxNoCodeGroups)) OF PDSCH-CodeMap	
PDSCH-CodeMapping ::=	SEQUENCE { dl-ScramblingCode signallingMethod codeRange tfci-Range explicit replace }	SecondaryScramblingCode <u>OPTIONAL</u> , CHOICE { CodeRange, DSCH-MappingList, PDSCH-CodeInfoList, ReplacedPDSCH-CodeInfoList
PDSCH-Info ::=	SEQUENCE { tfcs-Identity timeInfo commonTimeslotInfo individualTimeslotInfoList }	TFCS-Identity <u>OPTIONAL</u> , TimeInfo, CommonTimeslotInfo <u>OPTIONAL</u> , IndividualTS-InfoPDSCH-List <u>OPTIONAL</u>
PDSCH-SHO-DCH-Info ::=	SEQUENCE { dsch-RadioLinkIdentifier tfci-CombiningSet rl-IdentifierList }	DSCH-RadioLinkIdentifier, TFCI-CombiningSet <u>OPTIONAL</u> , RL-IdentifierList <u>OPTIONAL</u>
PDSCH-SysInfo ::=	SEQUENCE { pdsch-Info dsch-TFS }	PDSCH-Info, TransportFormatSet <u>OPTIONAL</u>
PDSCH-SysInfoList ::=	SEQUENCE (SIZE (1..maxPDSCHcount)) OF PDSCH-SysInfo	
PersistenceScalingFactor ::=	ENUMERATED { psf0-9, psf0-8, psf0-7, psf0-6, psf0-5, psf0-4, psf0-3, psf0-2 }	
PersistenceScalingFactorList ::=	SEQUENCE (SIZE (1..6)) OF PersistenceScalingFactor	
PI-CountPerFrame ::=	ENUMERATED { e18, e36, e72, e144 }	
PICH-Info ::=	CHOICE { fdd secondaryScramblingCode channelisationCode256 pi-CountPerFrame sttd-Indicator }, tdd channelisationCode timeslot burstType midambleShift repetitionPeriodLengthOffset pagingIndicatorLength n-GAP n-PCH }	SecondaryScramblingCode <u>OPTIONAL</u> , ChannelisationCode256, PI-CountPerFrame, STTD-Indicator TDD-PICH-CCode <u>OPTIONAL</u> , Timeslot <u>OPTIONAL</u> , BurstType, MidambleShift <u>OPTIONAL</u> , RepPerLengthOffset-PICH <u>OPTIONAL</u> , PagingIndicatorLength <u>OPTIONAL</u> , N-GAP <u>OPTIONAL</u> , N-PCH <u>OPTIONAL</u>


```

}

PICH-PowerOffset ::=                INTEGER (-10..5)

PilotBits128 ::=                    ENUMERATED {
                                     pb4, pb8 }

PilotBits256 ::=                    ENUMERATED {
                                     pb2, pb4, pb8 }

PositionFixedOrFlexible ::=         ENUMERATED {
                                     fixed,
                                     flexible }

PowerControlAlgorithm ::=           CHOICE {
    algorithm1                        TPC-StepSize,
    algorithm2                        NULL
}

PowerOffsetP0 ::=                   INTEGER (1..8)

PRACH-Midamble ::=                  ENUMERATED {
    direct,
    direct-Inverted }

PRACH-Partitioning ::=              SEQUENCE (SIZE (1..8)) OF
    AccessServiceClass

PRACH-PowerOffset ::=               SEQUENCE {
    powerOffsetP0                      PowerOffsetP0,
    preambleRetransMax                 PreambleRetransMax
}

PRACH-RACH-Info ::=                 SEQUENCE {
    modeSpecificInfo                   CHOICE {
        fdd                             SEQUENCE {
            availableSignatureList      AvailableSignatureList,
            availableSF                  SF-PRACH,
            scramblingCodeWordNumber    ScramblingCodeWordNumber,
            puncturingLimit             PuncturingLimit,
            availableSubChannelNumberList AvailableSubChannelNumberList
        },
        tdd                             SEQUENCE {
            timeslot                     Timeslot,
            channelisationCode           TDD-PRACH-CCode,
            prach-Midamble               PRACH-Midamble
        }
    }
}

PRACH-SystemInformation ::=          SEQUENCE {
    prach-RACH-Info                    PRACH-RACH-Info,
    rach-TransportFormatSet            TransportFormatSet,
    rach-TFCS                          TFCS,
    modeSpecificInfo                   CHOICE {
        fdd                             SEQUENCE {
            prach-Partitioning          PRACH-Partitioning,
            persistenceScalingFactorList PersistenceScalingFactorList
        } OPTIONAL,
        tdd                             SEQUENCE {
            ac-To-ASC-MappingTable      AC-To-ASC-MappingTable
            primaryCPICH-TX-Power       PrimaryCPICH-TX-Power,
            constantValue                ConstantValue,
            prach-PowerOffset            PRACH-PowerOffset,
            rach-TransmissionParameters RACH-TransmissionParameters,
            aich-Info                    AICH-Info
        } OPTIONAL,
        asc-Info                        ASC-Info
    }
}

PRACH-SystemInformationList ::=      SEQUENCE (SIZE (1..maxPRACHcount)) OF
    PRACH-SystemInformation

PreambleRetransMax ::=              INTEGER (1..64)

-- **TODO**, tabular definition a little unclear

```

```

PreDefPhyChConfiguration ::=          SEQUENCE {
    ul-DPCH-InfoPredef                UL-DPCH-InfoPredef,
    dl-CommonInformationPredef         DL-CommonInformationPredef
}

PrimaryCCPCH-Info ::=                 CHOICE {
    fdd                                SEQUENCE {
        tx-DiversityIndicator         BOOLEAN
    },
    tdd                                SEQUENCE {
        timeslot                      Timeslot                OPTIONAL,
        cellParametersID              CellParametersID        OPTIONAL,
        syncCase                      SyncCase                OPTIONAL,
        repetitionPeriodLengthAndOffset RepetitionPeriodLengthAndOffset
    OPTIONAL,
        blockSTTD-Indicator           BlockSTTD-Indicator    OPTIONAL
    }
}

PrimaryCCPCH-InfoSI ::=               CHOICE {
    fdd                                SEQUENCE {
        tx-DiversityIndicator         BOOLEAN
    },
    tdd                                SEQUENCE {
        repetitionPeriodLengthAndOffset RepetitionPeriodLengthAndOffset OPTIONAL,
        blockSTTD-Indicator           BlockSTTD-Indicator    OPTIONAL
    }
}

PrimaryCCPCH-TX-Power ::=             INTEGER (6..43)

PrimaryCPICH-Info ::=                 SEQUENCE {
    primaryScramblingCode              PrimaryScramblingCode
}

-- Value range -10 .. 50 used for Release 99
PrimaryCPICH-TX-Power ::=             INTEGER (-10..53)

PrimaryScramblingCode ::=            INTEGER (0..511)

PRM ::=                               ENUMERATED {
    pr-mode0, pr-mode1 }

PuncturingLimit ::=                  ENUMERATED {
    p10-40, p10-44, p10-48, p10-52, p10-56,
    p10-60, p10-64, p10-68, p10-72, p10-76,
    p10-80, p10-84, p10-88, p10-92, p10-96, p11 }

PUSCH-AllocationAssignment ::=       SEQUENCE {
    pusch-PowerControlInfo            PUSCH-PowerControlInfo    OPTIONAL,
    timeInfo                          TimeInfo,
    commonTimeslotInfo                CommonTimeslotInfo        OPTIONAL,
    timeslotInfoList                  IndividualTS-InfoPUSCH-List  OPTIONAL
}

PUSCH-ChannelisationCode ::=         ENUMERATED {
    cc1-1, cc2-1, cc2-2,
    cc4-1, cc4-2, cc4-3, cc4-4,
    cc8-1, cc8-2, cc8-3, cc8-4,
    cc8-5, cc8-6, cc8-7, cc8-8,
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

PUSCH-Info ::=                       SEQUENCE {
    pusch-Allocation                  CHOICE {
        pusch-AllocationPending      NULL,
        pusch-AllocationAssignment   PUSCH-AllocationAssignment
    }
}

PUSCH-PowerControlInfo ::=           SEQUENCE {
    ul-TargetSIR                      UL-TargetSIR
}

PUSCH-SysInfo ::=                    SEQUENCE {
    pusch-Info                        PUSCH-Info,

```

```

    usch-TFS                                TransportFormatSet                OPTIONAL
}

PUSCH-SysInfoList ::=                      SEQUENCE (SIZE (1..maxPUSCHcount)) OF
                                           PUSCH-SysInfo

RACH-TransmissionParameters ::=          SEQUENCE {
    mmax                                    INTEGER (1..32),
    nb01Min                                 NB01Min,
    nb01Max                                 NB01Max
}

ReducedScramblingCodeNumber ::=          INTEGER (0..8191)

RepetitionPeriodAndLength ::=            CHOICE {
    repetitionPeriod1                       NULL,
    repetitionPeriod2                       INTEGER (1..1),
    -- repetitionPeriod2 could just as well be NULL also.
    repetitionPeriod4                       INTEGER (1..3),
    repetitionPeriod8                       INTEGER (1..7),
    repetitionPeriod16                     INTEGER (1..15),
    repetitionPeriod32                     INTEGER (1..31),
    repetitionPeriod64                     INTEGER (1..63)
}

RepetitionPeriodLengthAndOffset ::=      CHOICE {
    repetitionPeriod1                       NULL,
    repetitionPeriod2                       SEQUENCE {
        length                               NULL,
        offset                               INTEGER (0..1)
    },
    repetitionPeriod4                       SEQUENCE {
        length                               INTEGER (1..3),
        offset                               INTEGER (0..3)
    },
    repetitionPeriod8                       SEQUENCE {
        length                               INTEGER (1..7),
        offset                               INTEGER (0..7)
    },
    repetitionPeriod16                     SEQUENCE {
        length                               INTEGER (1..15),
        offset                               INTEGER (0..15)
    },
    repetitionPeriod32                     SEQUENCE {
        length                               INTEGER (1..31),
        offset                               INTEGER (0..31)
    },
    repetitionPeriod64                     SEQUENCE {
        length                               INTEGER (1..63),
        offset                               INTEGER (0..63)
    }
}

ReplacedPDSCH-CodeInfo ::=                SEQUENCE {
    tfci-Field2                             MaxTFCI-Field2Value,
    spreadingFactor                         SF-PDSCH,
    codeNumber                              CodeNumberDSCH,
    multiCodeInfo                           MultiCodeInfo
}

ReplacedPDSCH-CodeInfoList ::=            SEQUENCE (SIZE (1..maxReplaceCount)) OF
                                           ReplacedPDSCH-CodeInfo

RepPerLengthOffset-PICH ::=              CHOICE {
    rpp4-2                                  INTEGER (0..3),
    rpp8-2                                  INTEGER (0..7),
    rpp8-4                                  INTEGER (0..7),
    rpp16-2                                 INTEGER (0..15),
    rpp16-4                                 INTEGER (0..15),
    rpp32-2                                 INTEGER (0..31),
    rpp32-4                                 INTEGER (0..31),
    rpp64-2                                 INTEGER (0..63),
    rpp64-4                                 INTEGER (0..63)
}

RL-AdditionInformation ::=                SEQUENCE {
    primaryCPICH-Info                       PrimaryCPICH-Info,
    dl-DPCH-InfoPerRL                       DL-DPCH-InfoPerRL,
}

```

```

    tfci-CombiningIndicator      BOOLEAN,
    secondaryCCPCH-Info         SecondaryCCPCH-Info      OPTIONAL,
    sib-ReferenceListFACH       SIB-ReferenceListFACH    OPTIONAL
}

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

RL-IdentifierList ::= SEQUENCE (SIZE(1..maxCombineSet)) OF
                      PrimaryCPICH-Info

RL-RemovalInformation ::= SEQUENCE {
    primaryCPICH-Info      PrimaryCPICH-Info
}

RL-RemovalInformationList ::= SEQUENCE (SIZE (1..maxDelRLcount)) OF
                               RL-RemovalInformation

S-Field ::= ENUMERATED {
    e1bit, e2bits }

SCCPCH-ChannelisationCode ::= ENUMERATED {
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

SCCPCH-SystemInformation ::= SEQUENCE {
    secondaryCCPCH-Info      SecondaryCCPCH-Info,
    tfcs                    TFCS,
    fach-PCH-InformationList FACH-PCH-InformationList,
    pich-Info               PICH-Info      OPTIONAL
}

SCCPCH-SystemInformationList ::= SEQUENCE (SIZE (1..maxSCCPCHcount)) OF
                                  SCCPCH-SystemInformation

ScramblingCodeChange ::= ENUMERATED {
    codeChange, noCodeChange }

ScramblingCodeType ::= ENUMERATED {
    shortSC,
    longSC }

ScramblingCodeWordNumber ::= INTEGER (0..15)

SecondaryCCPCH-Info ::= SEQUENCE {
    selectionIndicator      SelectionIndicator      OPTIONAL,
    -- The IE above is conditional on the logical channel type.
    modeSpecificInfo       CHOICE {
        fdd                 SEQUENCE {
            pCPICH-UsageForChannelEst PCPICH-UsageForChannelEst,
            secondaryCPICH-Info      SecondaryCPICH-Info      OPTIONAL,
            secondaryScramblingCode  SecondaryScramblingCode  OPTIONAL,
            sttd-Indicator          STTD-Indicator,
            sf-AndCodeNumber        SF-AndCodeNumber,
            pilotSymbolExistence    BOOLEAN,
            tfci-Existence          BOOLEAN,
            positionFixedOrFlexible  PositionFixedOrFlexible,
            timingOffset            TimingOffset      OPTIONAL
        },
        tdd                 SEQUENCE {
            -- TABULAR: the offset is included in CommonTimeslotInfoSCCPCH
            commonTimeslotInfo      CommonTimeslotInfoSCCPCH  OPTIONAL,
            individualTimeslotInfo  IndividualTimeslotInfo,
            channelisationCode      SCCPCH-ChannelisationCode
        }
    }
}

SecondaryCPICH-Info ::= SEQUENCE {
    secondaryDL-ScramblingCode      SecondaryScramblingCode      OPTIONAL,
    channelisationCode              ChannelisationCode256
}

-- Value range 1..15 used for Release 99
SecondaryScramblingCode ::= INTEGER (1..16)

```

```

SecondInterleavingMode ::=          ENUMERATED {
                                        frameRelated, timeslotRelated }

SelectionIndicator ::=              ENUMERATED {
                                        on, off }

SF-AndCodeNumber ::=              CHOICE {
    sf4                               INTEGER (0..3),
    sf8                               INTEGER (0..7),
    sf16                              INTEGER (0..15),
    sf32                              INTEGER (0..31),
    sf64                              INTEGER (0..63),
    sf128                             INTEGER (0..127),
    sf256                             INTEGER (0..255)
}

SF-DL-DPCH ::=                    CHOICE {
    sfd4                              NULL,
    sfd8                              NULL,
    sfd16                             NULL,
    sfd32                             NULL,
    sfd64                             NULL,
    sfd128                            PilotBits128,
    sfd256                            PilotBits256,
    sfd512                            NULL
}

SF-PDSCH ::=                      ENUMERATED {
    sfp4, sfp8, sfp16, sfp32,
    sfp64, sfp128, sfp256, spare }

SF-PRACH ::=                      ENUMERATED {
    sfpr32, sfpr64, sfpr128, sfpr256 }

Signature ::=                     INTEGER (0..15)

SlotFormat ::=                   SEQUENCE {
    pc-PreambleSlotFormat             PC-PreambleSlotFormat,
    ul-DPCCH-SlotFormat               UL-DPCCH-SlotFormat,
    dl-DPCCH-SlotFormat               DL-DPCCH-SlotFormat
}

SSDT-CellIdentity ::=           ENUMERATED {
    ssdt-id-a, ssdt-id-b, ssdt-id-c,
    ssdt-id-d, ssdt-id-e, ssdt-id-f,
    ssdt-id-g, ssdt-id-h }

SSDT-Information ::=           SEQUENCE {
    s-Field                           S-Field,
    codeWordSet                       CodeWordSet
}

STTD-Indicator ::=             BOOLEAN

SyncCase ::=                   ENUMERATED {
    sc1, sc2 }

TDD-PICH-CCode ::=            ENUMERATED {
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

TDD-PRACH-CCode ::=          ENUMERATED {
    cc8-1, cc8-2, cc8-3, cc8-4,
    cc8-5, cc8-6, cc8-7, cc8-8,
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

TFC-ControlDuration ::=       ENUMERATED {
    tfc-cd1, tfc-cd16, tfc-cd24, tfc-cd32,
    tfc-cd48, tfc-cd64, tfc-cd128,
    tfc-cd192, tfc-cd256, tfc-cd512 }

TF-CI-Coding ::=             ENUMERATED {
    tfci-bits-4, tfci-bits-8,

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```

        tfci-bits-16, tfci-bits-32 }

-- **TODO**, not defined
TFCI-CombiningSet ::=
}

TGD ::=
INTEGER (0..35)

TGL ::=
INTEGER (1..15)

TGP ::=
INTEGER (1..256)

TimeInfo ::=
SEQUENCE {
    activationTime           ActivationTime           OPTIONAL,
    duration                 DurationTimeInfo       OPTIONAL
}

Timeslot ::=
INTEGER (0..14)

TimeslotList ::=
SEQUENCE (SIZE (1..14)) OF
    Timeslot

-- Actual value = IE value * 256
TimingOffset ::=
INTEGER (0..149)

TPC-CombinationIndex ::=
INTEGER (0..5)

TPC-StepSize ::=
ENUMERATED {
    dB1, dB2 }

TX-DiversityMode ::=
ENUMERATED {
    noDiversity,
    sttd,
    closedLoopMode1,
    closedLoopMode2 }

UARFCN-Nd ::=
INTEGER (0..16383)

UARFCN-Nt ::=
INTEGER (0..16383)

UARFCN-Nu ::=
INTEGER (0..16383)

UCSM-Info ::=
SEQUENCE {
    availableMinimumSF-ListUCSM    AvailableMinimumSF-ListUCSM,
    nf-Max                         NF-Max,
    channelReqParamsForUCSM-List   ChannelReqParamsForUCSM-List    OPTIONAL
}

UL-CCTrCH ::=
SEQUENCE {
    tfcs-Identity                 TFCS-Identity           OPTIONAL,
    timeInfo                      TimeInfo,                OPTIONAL,
    commonTimeslotInfo            CommonTimeslotInfo      OPTIONAL,
    timeslotInfoList              IndividualTS-InfoUL-CCTrCH-List  OPTIONAL
}

UL-CCTrCHList ::=
SEQUENCE (SIZE (1..maxUL-CCTrCHcount)) OF
    UL-CCTrCH

UL-ChannelRequirement ::=
CHOICE {
    ul-DPCH-Info                 UL-DPCH-Info,
    prach-RACH-Info              PRACH-RACH-Info,
    spare                         NULL
}

UL-DL-Mode ::=
ENUMERATED {
    dl-Only, ul-DL }

UL-DPCH-SlotFormat ::=
ENUMERATED {
    slf0, slf1, slf2, slf3, slf4, slf5 }

UL-DPCH-Info ::=
SEQUENCE {
    ul-DPCH-PowerControlInfo      UL-DPCH-PowerControlInfo  OPTIONAL,
    modeSpecificInfo              CHOICE {
        fdd                       SEQUENCE {
            scramblingCodeType     ScramblingCodeType,
            scramblingCode          UL-ScramblingCode,
            dpdch-ChannelisationCodeList  DPDCH-ChannelisationCodeList,
            tfci-Existence          BOOLEAN,

```

```

        fbi-BitNumber          FBI-BitNumber,
        puncturingLimit       PuncturingLimit
    },
    tdd                        SEQUENCE {
        ul-CCTrCHList         UL-CCTrCHList
    }
}

UL-DPCH-InfoHO ::=          SEQUENCE {
    ul-DPCH-PowerControlInfo  UL-DPCH-PowerControlInfoHO          OPTIONAL,
    modeSpecificInfo          CHOICE {
        fdd                    SEQUENCE {
            scramblingCodeType  ScramblingCodeType,
            scramblingCode       UL-ScramblingCode,
            dpdch-ChannelisationCodeList  DPDCH-ChannelisationCodeList,
            tfci-Existence      BOOLEAN,
            fbi-BitNumber        FBI-BitNumber,
            puncturingLimit      PuncturingLimit
        },
        tdd                    SEQUENCE {
            ul-CCTrCHList       UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoPredef ::=    SEQUENCE {
    ul-DPCH-PowerControlInfo  UL-DPCH-PowerControlInfo,
    modeSpecificInfo          CHOICE {
        fdd                    SEQUENCE {
            maxAllowedUL-TX-Power  MaxAllowedUL-TX-Power          OPTIONAL,
            pc-Preamble            PC-Preamble                    OPTIONAL,
            tfci-Existence         BOOLEAN,
            puncturingLimit        PuncturingLimit
        },
        tdd                    NULL
    }
}

UL-DPCH-InfoShort ::=    SEQUENCE {
    ul-DPCH-PowerControlInfo  UL-DPCH-PowerControlInfoShort,
    modeSpecificInfo          CHOICE {
        fdd                    SEQUENCE {
            scramblingCodeType     ScramblingCodeType,
            reducedScramblingCodeNumber  ReducedScramblingCodeNumber,
            dpdch-ChannelisationCode  DPDCH-ChannelisationCode,
            numberOfFBI-Bits        NumberOfFBI-Bits
            -- The IE above is CH, which is questionable as such.
            -- There's no point in making a 1-bit integer optional, however.
        },
        tdd                    NULL
    }
}

UL-DPCH-PowerControlInfo ::= CHOICE {
    fdd                        SEQUENCE {
        dpch-PowerOffset         DPCCH-PowerOffset,
        pc-Preamble              PC-Preamble,
        powerControlAlgorithm    PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                        SEQUENCE {
        maxAllowedUL-TX-Power    MaxAllowedUL-TX-Power          OPTIONAL,
        ul-TargetSIR             UL-TargetSIR,
        handoverGroup            SEQUENCE {
            individualTS-InterferenceList  IndividualTS-InterferenceList,
            dpch-ConstantValue            ConstantValue
        }
    }
}

UL-DPCH-PowerControlInfoHO ::= CHOICE {
    fdd                        SEQUENCE {
        dpch-PowerOffset         DPCCH-PowerOffset,
        powerControlAlgorithm    PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                        SEQUENCE {

```

```

        maxAllowedUL-TX-Power          MaxAllowedUL-TX-Power          OPTIONAL,
        ul-TargetSIR                   UL-TargetSIR,
        handoverGroup                   SEQUENCE {
            individualTS-InterferenceList IndividualTS-InterferenceList,
            dpch-ConstantValue           ConstantValue
        }
    }
}

UL-DPCH-PowerControlInfoShort ::= SEQUENCE {
    modeSpecificInfo                 CHOICE {
        fdd                           SEQUENCE {
            dpccch-PowerOffset         DPCCH-PowerOffset,
            powerControlAlgorithm      PowerControlAlgorithm
        },
        tdd                            NULL
    }
}

-- Value range -110 .. -70 used for Release 99
UL-Interference ::= INTEGER (-110..-47)

-- **TODO**, specification possibly wrong. 777215 mod 16 <> 0...
UL-ScramblingCode ::= INTEGER (0..48575)

-- Actual value = (IE value * 0.5) - 11
UL-TargetSIR ::= INTEGER (0..62)

UL-TimingAdvance ::= INTEGER (0..63)

UL-TS-ChannelisationCode ::= ENUMERATED {
    cc1-1, cc2-1, cc2-2,
    cc4-1, cc4-2, cc4-3, cc4-4,
    cc8-1, cc8-2, cc8-3, cc8-4,
    cc8-5, cc8-6, cc8-7, cc8-8,
    cc16-1, cc16-2, cc16-3, cc16-4,
    cc16-5, cc16-6, cc16-7, cc16-8,
    cc16-9, cc16-10, cc16-11, cc16-12,
    cc16-13, cc16-14, cc16-15, cc16-16 }

VCAM-Info ::= SEQUENCE {
    availableMinimumSF-List          AvailableMinimumSF-ListVCAM
}

END

```

11.3.7 Measurement information elements

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

```
BEGIN
```

```
IMPORTS
```

```
    CellIdentity
FROM UTRANMobility-IEs
```

```
    DRX-CycleLengthCoefficient
FROM UserEquipment-IEs
```

```
    RB-Identity
FROM RadioBearer-IEs
```

```
    TransportChannelIdentity
FROM TransportChannel-IEs
```

```
    FrequencyInfo,
    MaxAllowedUL-TX-Power,
    PrimaryCCPCH-Info,
    PrimaryCCPCH-TX-Power,
    PrimaryCPICH-Info,
    PrimaryCPICH-TX-Power,
    Timeslot
FROM PhysicalChannel-IEs
```

```
    BSIC
FROM Other-IEs
```



```

maxAdditionalMeas,
maxAddRLcount,
maxBLER,
maxCCTrCHcount,
maxCellCount,
maxCellsForbidden,
maxDelRLcount,
maxEventCount,
maxFreqCount,
maxInterCells,
maxInterRAT,
maxInterSys,
maxInterSysCells,
maxIntraCells,
maxN-BadSAT,
maxN-SAT,
maxNoCells,
maxNonUsedFrequency,
maxNumFreq,
maxTraf,
maxTrCHcount,
maxTSperCCTrCHcount,
maxTStoMeasureCount,
maxUsedRLcount,
maxUsedUplTSCount
FROM Constant-definitions;

AcquisitionSatInfo ::=          SEQUENCE {
    satID                        INTEGER (0..63),
    doppler0thOrder              INTEGER (-2048..2047),
    extraDopplerInfo             OPTIONAL,
    codePhase                    INTEGER (0..1022),
    integerCodePhase             INTEGER (0..19),
    gps-BitNumber                INTEGER (0..3),
    codePhaseSearchWindow       CodePhaseSearchWindow,
    azimuthAndElevation         AzimuthAndElevation          OPTIONAL
}

AcquisitionSatInfoList ::=     SEQUENCE (SIZE (1..maxN-SAT)) OF
    AcquisitionSatInfo

ActiveSetCellReport ::=       ENUMERATED {
    includeAll,
    excludeAll,
    other }

-- **TODO**, definition to be checked from TS 09.31
AdditionalAssistanceData ::=   SEQUENCE {
}

AdditionalMeasurementID-List ::= SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
    MeasurementIdentityNumber

AlmanacSatInfo ::=           SEQUENCE {
    satID                        INTEGER (0..63),
    deltaI                       BIT STRING (SIZE (16)),
    e                            BIT STRING (SIZE (16)),
    m0                           BIT STRING (SIZE (24)),
    a-Sqrt                       BIT STRING (SIZE (24)),
    omega0                       BIT STRING (SIZE (24)),
    omegaDot                     BIT STRING (SIZE (16)),
    omega                        BIT STRING (SIZE (24)),
    af0                          BIT STRING (SIZE (11)),
    af1                          BIT STRING (SIZE (11))
}

AlmanacSatInfoList ::=       SEQUENCE (SIZE (1..maxN-SAT)) OF
    AlmanacSatInfo

AverageRLC-BufferPayload ::=  ENUMERATED {
    pla0, pla4, pla8, pla16, pla32,
    pla64, pla128, pla256, pla512,
    pla1024, pla2k, pla4k, pla8k, pla16k }

AzimuthAndElevation ::=      SEQUENCE {
    azimuth                      INTEGER (0..31),
    elevation                    INTEGER (0..7)
}

```

```

BadSatList ::=                               SEQUENCE (SIZE (1..maxN-BadSAT)) OF
                                             INTEGER (0..63)

BCCH-ARFCN ::=                               INTEGER (0..1023)

BLER-MeasurementResults ::=                 SEQUENCE {
  transportChannelIdentity                   TransportChannelIdentity,
  dl-TransportChannelBLER                    DL-TransportChannelBLER           OPTIONAL
}

BLER-MeasurementResultsList ::=             SEQUENCE (SIZE(1..maxBLER)) OF
                                             BLER-MeasurementResults

BLER-TransChIdList ::=                      SEQUENCE (SIZE (1..maxBLER)) OF
                                             TransportChannelIdentity

-- IE value 0 = true value -0.05, IE value 16 = true value -0.003125,
-- IE value 17 = true value 0.003125, IE value 32 = true value 0.05
BTS-ClockDrift ::=                          INTEGER (0..31)

BurstModeParameters ::=                    SEQUENCE {
  burstStart                                 INTEGER (0..15),
  burstLength                                INTEGER (10..25),
  burstFreq                                  INTEGER (1..16)
}

CCTrCH-Timeslot ::=                         SEQUENCE {
  iscp                                       DL-TimeslotISCP                 OPTIONAL,
  rscp                                       RSCP                             OPTIONAL
}

CCTrCH-TimeslotList ::=                     SEQUENCE (SIZE(1..maxTSperCCTrCHcount)) OF
                                             CCTrCH-Timeslot

CellDCH-ReportCriteria ::=                  CHOICE {
  intraFreqReportingCriteria                IntraFreqReportingCriteria,
  periodicalReportingCriteria                PeriodicalReportingCriteria
}

-- Actual value = IE value * 0.5
CellIndividualOffset ::=                    INTEGER (-20..20)

CellInfo ::=                                SEQUENCE {
  cellIndividualOffset                       CellIndividualOffset             DEFAULT 1,
  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,
      dl-CCTrCH-Info                           DL-CCTrCH-Info                 OPTIONAL,
      dl-TimeslotInfo                          DL-TimeslotInfo                 OPTIONAL
    }
  }
}

CellInfoSI ::=                              SEQUENCE {
  cellIndividualOffset                       CellIndividualOffset             DEFAULT 1,
  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,
      dl-CCTrCH-Info                           DL-CCTrCH-Info                 OPTIONAL,
      dl-TimeslotInfo                          DL-TimeslotInfo                 OPTIONAL
    }
  }
}

```

```

    },
    cellSelectionReselectionInfo      CellSelectionReselectionInfo,
    signallingOption                  SignallingOption
}

CellMeasuredResults ::=              SEQUENCE {
    cellIdentity                      CellIdentity                      OPTIONAL,
    sfn-SFN-ObsTimeDifference        SFN-SFN-ObsTimeDifference        OPTIONAL,
    modeSpecificInfo                 CHOICE {
        fdd                           SEQUENCE {
            primaryCPICH-Info          PrimaryCPICH-Info,
            cpich-Ec-N0                CPICH-Ec-N0                    OPTIONAL,
            cpich-RSCP                 CPICH-RSCP                      OPTIONAL,
            cpich-SIR                  CPICH-SIR                      OPTIONAL,
            pathloss                   Pathloss                        OPTIONAL,
            cfn-SFN-ObsTimeDifference  CFN-SFN-ObsTimeDifference      OPTIONAL
        },
        tdd                           SEQUENCE {
            primaryCCPCH-Info          PrimaryCCPCH-Info,
            primaryCCPCH-RSCP          PrimaryCCPCH-RSCP              OPTIONAL,
            dl-CCTrCH-SIR-List         DL-CCTrCH-SIR-List            OPTIONAL,
            dl-TimeslotISCP-List       DL-TimeslotISCP-List          OPTIONAL
        }
    }
}

CellMeasurementEventResults ::=      CHOICE {
    fdd                               SEQUENCE (SIZE (1..maxCellCount)) OF
        PrimaryCPICH-Info,
    tdd                               SEQUENCE (SIZE (1..maxCellCount)) 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                     CellIdentity,
    modeSpecificInfo                 CHOICE {
        fdd                           SEQUENCE {
            cpich-Ec-N0                BOOLEAN,
            cpich-RSCP                 BOOLEAN,
            cpich-SIR                  BOOLEAN,
            pathloss                   BOOLEAN,
            cfn-SFN-ObsTimeDifference  BOOLEAN
        },
        tdd                           SEQUENCE {
            dl-CCTrCH-SIR              BOOLEAN,
            timeslotISCP               BOOLEAN,
            primaryCCPCH-RSCP          BOOLEAN,
            pathloss                   BOOLEAN
        }
    }
}

CellSelectionReselectionInfo ::=     SEQUENCE {
    modeSpecificInfo                 CHOICE {
        fdd                            Qmin-FDD,
        tdd                            Qmin-TDD
    }
    maxAllowedUL-TX-Power            MaxAllowedUL-TX-Power          OPTIONAL,
    signallingOption                  SignallingOption                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..maxNoCells)) OF

```

```

CellToMeasure

CellToReport ::=
    frequency
    bsic
}

CellToReportList ::=
    SEQUENCE (SIZE (1..maxCellCount)) OF
        CellToReport

CFN-SFN-ObsTimeDifference ::=
    INTEGER (0..9830399)

CodePhaseSearchWindow ::=
    ENUMERATED {
        w1023, w1, w2, w3, w4, w6, w8,
        w12, w16, w24, w32, w48, w64,
        w96, w128, w192 }

CompressedNavModel ::=
    iode
    t-oe
    c-rc
    c-rs
    c-ic
    c-is
    c-uc
    c-us
    e
    m0
    a-Sqrt
    delta-n
    omega0
    omegaDot
    i0
    iDot
    omega
    t-oc
    af0
    af1
    af2
}

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)

CPICH-SIR ::=
    INTEGER (-10..20)

DGPS-CorrectionSatInfo ::=
    satID
    iode
    udre
    prc
    rrc
    deltaPRC2
    deltaRRC2
    deltaPRC3
    deltaRRC3
}

DGPS-CorrectionSatInfoList ::=
    SEQUENCE (SIZE (1..maxN-SAT)) OF
        DGPS-CorrectionSatInfo

DGPS-Information ::=
    satID
    iode
    udre
    scaleFactor
    prc
    rrc
}

DGPS-InformationList ::=
    SEQUENCE (SIZE (1..maxN-SAT)) 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 }

-- **TODO**, not defined yet
DL-CCTrCH-Info ::= SEQUENCE {
}

DL-CCTrCH-SIR ::= SEQUENCE {
    ccTrCH-TimeslotList
}

DL-CCTrCH-SIR-List ::= SEQUENCE (SIZE(1..maxCCTrCHcount)) OF
    DL-CCTrCH-SIR

-- Actual value = IE value * 0.02
DL-PhysicalChannelBER ::= INTEGER (0..255)

-- **TODO**, not defined yet
DL-TimeslotInfo ::= SEQUENCE {
}

-- **TODO**, not defined yet
DL-TimeslotISCP ::= SEQUENCE {
}

DL-TimeslotISCP-List ::= SEQUENCE (SIZE(1..maxTStoMeasureCount)) OF
    DL-TimeslotISCP

-- Actual value = IE value * 0.02
DL-TransportChannelBLER ::= INTEGER (0..255)

DopplerUncertainty ::= ENUMERATED {
    hz12-5, hz25, hz50, hz100, hz200 }

EnvironmentCharacterization ::= ENUMERATED {
    possibleHeavyMultipathNLOS,
    lightMultipathLOS,
    notDefined }

Event1a ::= SEQUENCE {
    triggeringCondition      TriggeringCondition,
    reportingRange          ReportingRange,
    forbiddenAffectCellList ForbiddenAffectCellList,
    w                       W,
    hysteresis              Hysteresis OPTIONAL,
    reportDeactivationThreshold ReportDeactivationThreshold
}

Event1b ::= SEQUENCE {
    triggeringCondition      TriggeringCondition,
    reportingRange          ReportingRange,
    forbiddenAffectCellList ForbiddenAffectCellList,
    w                       W,
    hysteresis              Hysteresis OPTIONAL
}

Event1c ::= SEQUENCE {
    hysteresis              Hysteresis OPTIONAL,
    replacementActivationThreshold ReplacementActivationThreshold
}

Event2a ::= SEQUENCE {
    usedFreqThreshold      Threshold,
    usedFreqW              W,
    hysteresis              HysteresisInterFreq,
    timeToTrigger          TimeToTrigger,
    reportingAmount        ReportingAmount,
    reportingInterval      ReportingInterval,
    nonUsedFreqParameterList NonUsedFreqParameterList OPTIONAL
}

Event2b ::= SEQUENCE {
    usedFreqThreshold      Threshold,
    usedFreqW              W,
    hysteresis              HysteresisInterFreq,
    timeToTrigger          TimeToTrigger,
    reportingAmount        ReportingAmount,
    reportingInterval      ReportingInterval,

```

```

    nonUsedFreqParameterList          NonUsedFreqParameterList          OPTIONAL
}

Event2c ::=
    hysteresis                        HysteresisInterFreq,
    timeToTrigger                      TimeToTrigger,
    reportingAmount                    ReportingAmount,
    reportingInterval                  ReportingInterval,
    nonUsedFreqParameterList          NonUsedFreqParameterList          OPTIONAL
}

Event2d ::=
    usedFreqThreshold                  Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event2e ::=
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    nonUsedFreqParameterList           NonUsedFreqParameterList          OPTIONAL
}

Event2f ::=
    usedFreqThreshold                  Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event3a ::=
    thresholdOwnSystem                 Threshold,
    w                                    W,
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event3b ::=
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event3c ::=
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event3d ::=
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

EventIDInterFreq ::=
    ENUMERATED {
        e2a, e2b, e2c, e2d, e2e, e2f }

EventIDInterSystem ::=
    ENUMERATED {
        e3a, e3b, e3c, e3d }

EventIDIntraFreq ::=
    ENUMERATED {
        e1a, e1b, e1c, e1d, e1e,

```

```

elf, elg, elh, eli, elj }

EventIDTrafficVolume ::= ENUMERATED {
    e4a, e4b }

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                     DRX-CycleLengthCoefficient,
    otherRAT-InSysInfoList     OtherRAT-InSysInfoList
}

FilterCoefficient ::= ENUMERATED {
    fc1, fc2, fc3, fc4, fc6, fc8,
    fc12, fc16, fc24, fc32, fc64,
    fc128, fc256, fc512, fc1024,
    spare1 }

FineSFN-SFN ::= ENUMERATED {
    fs0, fs0-25, fs0-5, fs0-75 }

ForbiddenAffectCell ::= SEQUENCE {
    modeSpecificInfo           CHOICE {
        fdd                     SEQUENCE {
            primaryCPICH-Info   PrimaryCPICH-Info
        },
        tdd                     SEQUENCE {
            primaryCCPCH-Info   PrimaryCCPCH-Info
        }
    }
}

ForbiddenAffectCellList ::= SEQUENCE (SIZE(1..maxCellsForbidden)) OF
    ForbiddenAffectCell

FreqQualityEstimateQuantity-FDD ::= ENUMERATED {
    cpich-Ec-N0,
    cpich-RSCP }

FreqQualityEstimateQuantity-TDD ::= ENUMERATED {
    primaryCCPCH-RSCP }

-- **TODO**, not defined yet
Frequency ::= SEQUENCE {
}

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..maxN-SAT)) OF
    GPS-MeasurementParam

GPS-TOW-1msec ::= INTEGER (0..604700000)

GPS-TOW-Assist ::= SEQUENCE {
    satID                      INTEGER (0..63),
    tlm-Message                BIT STRING (SIZE (14)),
    antiSpoof                  BOOLEAN,
}

```

```

    alert                                BOOLEAN,
    tlm-Reserved                          BIT STRING (SIZE (2))
}

GPS-TOW-AssistList ::=                   SEQUENCE (SIZE (1..maxN-SAT)) OF
                                         GPS-TOW-Assist

GPS-TOW-HighResolution ::=               INTEGER (0..999)

GSM-CarrierRSSI ::=                      BIT STRING (SIZE (6))

-- **TODO**, not defined yet
GSM-OutputPower ::=                     SEQUENCE {
}

HCS-CellReselectInformation ::=          SEQUENCE {
    penaltyTime                           PenaltyTime                               OPTIONAL
    -- TABULAR: Temporary offset is nested inside PenaltyTime
}

HCS-NeighbouringCellInformation ::=       SEQUENCE {
    hcs-PRIO                               HCS-PRIO                               OPTIONAL,
    q-HCS                                   Q-HCS                                   OPTIONAL,
    hcs-CellReselectInformation            HCS-CellReselectInformation            OPTIONAL
}

HCS-PRIO ::=                             INTEGER (0..7)

HCS-ServingCellInformation ::=           SEQUENCE {
    hcs-PRIO                               HCS-PRIO                               DEFAULT 0,
    q-HCS                                   Q-HCS                                   DEFAULT 0,
    t-CRMax                                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..maxInterCells)

InterFreqCellInfoList ::=                 SEQUENCE {
    removedInterFreqCellList               RemovedInterFreqCellList                OPTIONAL,
    newInterFreqCellList                   NewInterFreqCellList                    OPTIONAL
}

InterFreqCellInfoSI-List ::=              SEQUENCE {
    removedInterFreqCellList               RemovedInterFreqCellList                OPTIONAL,
    newInterFreqCellList                   NewInterFreqCellSI-List                 OPTIONAL
}

InterFreqCellList ::=                    SEQUENCE (SIZE (1..maxFreqCount)) OF
                                         InterFreqCell

InterFreqCellMeasuredResultsList ::=      SEQUENCE (SIZE (1..maxInterCells)) OF
                                         CellMeasuredResults

InterFreqEvent ::=                       CHOICE {
    event2a                                Event2a,
    event2b                                Event2b,
    event2c                                Event2c,
    event2d                                Event2d,
    event2e                                Event2e,
    event2f                                Event2f
}

InterFreqEventList ::=                    SEQUENCE (SIZE(1..maxEventCount)) OF
                                         InterFreqEvent

InterFreqEventResults ::=                 SEQUENCE {
    eventID                                EventIDInterFreq,
    interFreqCellList                      InterFreqCellList
}

```



```

}

InterFreqMeasQuantity ::=          SEQUENCE {
  reportingCriteria              CHOICE {
    intraFreqReportingCriteria   SEQUENCE {
      intraFreqMeasQuantity      IntraFreqMeasQuantity
    },
    interFreqReportingCriteria    SEQUENCE {
      filterCoefficient          FilterCoefficient,
      modeSpecificInfo           CHOICE {
        fdd                      SEQUENCE {
          freqQualityEstimateQuantity-FDD  FreqQualityEstimateQuantity-FDD
        },
        tdd                      SEQUENCE {
          freqQualityEstimateQuantity-TDD   FreqQualityEstimateQuantity-TDD
        }
      }
    }
  }
}

InterFreqMeasuredResults ::=      SEQUENCE {
  frequencyInfo                 FrequencyInfo                OPTIONAL,
  ultra-CarrierRSSI             UTRA-CarrierRSSI            OPTIONAL,
  interFreqCellMeasuredResultsList  InterFreqCellMeasuredResultsList  OPTIONAL
}

InterFreqMeasuredResultsList ::= SEQUENCE (SIZE (1..maxNumFreq)) OF
  InterFreqMeasuredResults

InterFreqMeasurementSysInfo ::=  SEQUENCE {
  interFreqMeasurementID        MeasurementIdentityNumber    OPTIONAL,
  interFreqCellInfoSI-List      InterFreqCellInfoSI-List     OPTIONAL,
  interFreqMeasQuantity         InterFreqMeasQuantity         OPTIONAL
}

InterFreqReportCriteria ::=      CHOICE {
  intraFreqReportingCriteria     IntraFreqReportingCriteria,
  interFreqReportingCriteria     InterFreqReportingCriteria,
  periodicalReportingCriteria    PeriodicalReportingCriteria,
  noReporting                    NULL
}

InterFreqReportingCriteria ::=   SEQUENCE {
  interFreqEventList             InterFreqEventList            OPTIONAL
}

InterFreqReportingQuantity ::=   SEQUENCE {
  ultra-Carrier-RSSI             BOOLEAN,
  frequencyQualityEstimate       BOOLEAN,
  nonFreqRelatedQuantities       CellReportingQuantities
}

InterFreqSetUpdate ::=          SEQUENCE {
  ue-AutonomousUpdateMode       UE-AutonomousUpdateMode
}

InterFrequencyMeasurement ::=    SEQUENCE {
  interFreqCellInfoList          InterFreqCellInfoList,
  interFreqMeasQuantity          InterFreqMeasQuantity        OPTIONAL,
  interFreqReportingQuantity     InterFreqReportingQuantity    OPTIONAL,
  reportingCellStatus            ReportingCellStatus          OPTIONAL,
  measurementValidity            MeasurementValidity            OPTIONAL,
  interFreqSetUpdate             InterFreqSetUpdate              OPTIONAL,
  reportCriteria                 InterFreqReportCriteria
}

InterSystemCellID ::=           INTEGER (0..maxInterSysCells)

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

InterSystemEvent ::=            CHOICE {
  event3a                        Event3a,
  event3b                        Event3b,
  event3c                        Event3c,
}

```

```

    event3d                                Event3d
}

InterSystemEventList ::=                   SEQUENCE (SIZE(1..maxEventCount)) 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,
            bsic-VerificationRequired      BOOLEAN
        },
        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
    },
    other                                    NULL
}

InterSystemMeasuredResultsList ::=         SEQUENCE (SIZE (1..maxInterSys)) OF
                                           InterSystemMeasuredResults

InterSystemMeasurement ::=                 SEQUENCE {
    interSystemCellInfoList                 InterSystemCellInfoList OPTIONAL,
    interSystemMeasQuantity                 InterSystemMeasQuantity OPTIONAL,
    interSystemReportingQuantity            InterSystemReportingQuantity OPTIONAL,
    reportingCellStatus                     ReportingCellStatus OPTIONAL,
    reportCriteria                           InterSystemReportCriteria
}

InterSystemMeasurementSysInfo ::=          SEQUENCE {
    interSystemMeasurementID                 MeasurementIdentityNumber OPTIONAL,
    interSystemCellInfoList                 InterSystemCellInfoList OPTIONAL,
    interSystemMeasQuantity                 InterSystemMeasQuantity OPTIONAL
}

InterSystemReportCriteria ::=              CHOICE {
    interSystemReportingCriteria             InterSystemReportingCriteria,
    periodicalReportingCriteria             PeriodicalReportingCriteria,
    noReporting                              NULL
}

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                SEQUENCE {}
  }
}

IntraFreqCellID ::=      INTEGER (0..maxIntraCells)

IntraFreqCellInfoList ::= SEQUENCE {
  removedIntraFreqCellList  RemovedIntraFreqCellList  OPTIONAL,
  newIntraFreqCellList      NewIntraFreqCellList      OPTIONAL
}

IntraFreqCellInfoSI ::= SEQUENCE {
  cellInfo                  CellInfoSI
}

IntraFreqCellInfoSI-List ::= SEQUENCE {
  removedIntraFreqCellList  RemovedIntraFreqCellList  OPTIONAL,
  newIntraFreqCellList      NewIntraFreqCellSI-List  OPTIONAL
}

IntraFreqEvent ::=      CHOICE {
  ela                      Event1a,
  elb                      Event1b,
  elc                      Event1c,
  eld                      Hysteresis,
  ele                      TriggeringCondition,
  elf                      TriggeringCondition,
  elg                      Hysteresis,
  elh                      Hysteresis,
  eli                      Hysteresis,
  elj                      Hysteresis
}

IntraFreqEventCriteria ::= SEQUENCE {
  event                    IntraFreqEvent,
  timeToTrigger            TimeToTrigger,
  reportingAmount          ReportingAmount,
  reportingInterval        ReportingInterval
}

IntraFreqEventCriteriaList ::= SEQUENCE (SIZE(1..maxEventCount)) OF
  IntraFreqEventCriteria

IntraFreqEventResults ::= SEQUENCE {
  eventID                  EventIDIntraFreq,
  cellMeasurementEventResults CellMeasurementEventResults
}

IntraFreqMeasQuantity ::= SEQUENCE {
  filterCoefficient        FilterCoefficient,
  modeSpecificInfo        CHOICE {
    fdd                    SEQUENCE {
      intraFreqMeasQuantity-FDD  IntraFreqMeasQuantity-FDD
    },
    tdd                    SEQUENCE {
      intraFreqMeasQuantity-TDD  IntraFreqMeasQuantity-TDD
    }
  }
}

IntraFreqMeasQuantity-FDD ::= ENUMERATED {
  cpich-Ec-NO,
  cpich-RSCP,
  cpich-SIR,
  pathloss,
  ultra-CarrierRSSI }

IntraFreqMeasQuantity-TDD ::= ENUMERATED {
  primaryCCPCH-RSCP,
  pathloss,
  timeslotISCP,
  ultra-CarrierRSSI }

IntraFreqMeasuredResults ::= SEQUENCE {
  cellMeasuredResults      CellMeasuredResults
}

IntraFreqMeasuredResultsList ::= SEQUENCE (SIZE (1..maxIntraCells)) OF

```

```

                                IntraFreqMeasuredResults

IntraFreqMeasurementSysInfo ::= SEQUENCE {
    intraFreqMeasurementID      MeasurementIdentityNumber      OPTIONAL,
    intraFreqCellInfoSI-List    IntraFreqCellInfoSI-List      OPTIONAL,
    intraFreqMeasQuantity       IntraFreqMeasQuantity          OPTIONAL,
    intraFreqReportingQuantityForRACH IntraFreqReportingQuantityForRACH OPTIONAL,
    maxReportedCellsOnRACH      MaxReportedCellsOnRACH          OPTIONAL,
    reportingInfoForCellDCH     ReportingInfoForCellDCH        OPTIONAL
}

IntraFreqReportCriteria ::= CHOICE {
    intraFreqReportingCriteria  IntraFreqReportingCriteria,
    periodicalReportingCriteria PeriodicalReportingCriteria,
    noReporting                 NULL
}

IntraFreqReportingCriteria ::= SEQUENCE {
    eventCriteriaList          IntraFreqEventCriteriaList
}

IntraFreqReportingQuantity ::= SEQUENCE {
    activeSetReportingQuantities CellReportingQuantities,
    monitoredSetReportingQuantities CellReportingQuantities,
    unlistedSetReportingQuantities CellReportingQuantities      OPTIONAL
}

IntraFreqReportingQuantityForRACH ::= SEQUENCE {
    sfn-SFN-ObsTimeDifference    SFN-SFN-ObsTimeDifference,
    modeSpecificInfo             CHOICE {
        fdd                       SEQUENCE {
            intraFreqRepQuantityRACH-FDD IntraFreqRepQuantityRACH-FDD
        },
        tdd                       SEQUENCE {
            intraFreqRepQuantityRACH-TDD IntraFreqRepQuantityRACH-TDD
        }
    }
}

IntraFreqRepQuantityRACH-FDD ::= ENUMERATED {
    cpich-EcN0, cpich-RSCP,
    cpich-SIR, pathloss, noReport }

IntraFreqRepQuantityRACH-TDD ::= ENUMERATED {
    timeslotISCP,
    primaryCCPCH-RSCP,
    noReport }

IntraFrequencyMeasurement ::= SEQUENCE {
    intraFreqCellInfoList      IntraFreqCellInfoList      OPTIONAL,
    intraFreqMeasQuantity      IntraFreqMeasQuantity      OPTIONAL,
    intraFreqReportingQuantity IntraFreqReportingQuantity      OPTIONAL,
    reportingCellStatus        ReportingCellStatus          OPTIONAL,
    measurementValidity         MeasurementValidity           OPTIONAL,
    reportCriteria              IntraFreqReportCriteria
}

IODD ::= INTEGER (0..255)

IODE ::= INTEGER (0..255)

IP-Length ::= ENUMERATED {
    ip15, ip110 }

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))

LCS-CipherParameters ::= SEQUENCE {
    cipheringKeyFlag          BIT STRING (SIZE (1)),
}

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```

    cipheringSerialNumber          INTEGER (0..65535)
}

LCS-Error ::=                      SEQUENCE {
    errorReason                    LCS-ErrorCause,
    additionalAssistanceData       AdditionalAssistanceData
    -- The IE above is defined in GSM 09.31, the actual definition
    -- will have to be checked
}

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..maxEventCount)) 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..604700000)
    },
    satelliteInformationList       AcquisitionSatInfoList
}

LCS-GPS-Almanac ::=              SEQUENCE {
    almanacSatInfoList            AlmanacSatInfoList
}

LCS-GPS-AssistanceSIB ::=        SEQUENCE {
    lcs-CipherParameters           LCS-CipherParameters           OPTIONAL,
    referenceGPS-TOW               ReferenceGPS-TOW,
    status                         DiffCorrectionStatus,
    btsClockDrift                  BTS-ClockDrift                 OPTIONAL,
    timeOffset                      LCS-TimeOffset                OPTIONAL,
    ioddd                           IODD                            OPTIONAL,
    dgps-InformationList            DGPS-InformationList          OPTIONAL
}

LCS-GPS-AssistanceData ::=        SEQUENCE {
    lcs-GPS-ReferenceTime          LCS-GPS-ReferenceTime          OPTIONAL,
    lcs-GPS-ReferenceLocation       LCS-GPS-ReferenceLocation       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      LCS-GPS-Real-timeIntegrity      OPTIONAL
}

LCS-GPS-DGPS-Corrections ::=      SEQUENCE {
    gps-TOW                         INTEGER (0..604799),
    statusHealth                     DiffCorrectionStatus,
    dgps-CorrectionSatInfoList      DGPS-CorrectionSatInfoList
}

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```

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-lmsec                       GPS-TOW-lmsec,
    gps-TOW-HighResolution              GPS-TOW-HighResolution    OPTIONAL,
    gps-MeasurementParamList           GPS-MeasurementParamList
}

LCS-GPS-NavigationModel ::=           SEQUENCE {
    n-SAT                               INTEGER (1..16),
    navigationModelSatInfoList         NavigationModelSatInfoList
}

-- **TODO**, definition in 23.032
LCS-GPS-ReferenceLocation ::=         SEQUENCE {
}

LCS-GPS-Real-timeIntegrity ::=        SEQUENCE {
    badSatList                          BadSatList
}

LCS-GPS-ReferenceTime ::=             SEQUENCE {
    gps-Week                            INTEGER (0..1023),
    gps-TOW                              INTEGER (0..604700000000),
    sfn                                  INTEGER (0..4095),
    gps-TOW-AssistList                  GPS-TOW-AssistList        OPTIONAL
}

LCS-GPS-UTC-Model ::=                SEQUENCE {
    a0                                   BIT STRING (SIZE (32)),
    a1                                   BIT STRING (SIZE (24)),
    delta-t-LS                          BIT STRING (SIZE (8)),
    t-ot                                 BIT STRING (SIZE (8)),
    wn-t                                 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..15)) 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                            INTEGER (0..604700000000),
    positionEstimate                   PositionEstimate
}

LCS-ReportCriteria ::=               CHOICE {
    lcs-ReportingCriteria              LCS-ReportingCriteria,
    periodicalReportingCriteria        PeriodicalReportingCriteria,
    noReporting                        NULL
}

```

```

LCS-ReportingCriteria ::=
    eventParameterList
}
SEQUENCE {
    LCS-EventParamList
}
OPTIONAL

LCS-ReportingQuantity ::=
    methodType
    positioningMethod
    responseTime
    accuracy
    gps-TimingOfCellWanted
    multipleSets
    environmentCharacterization
}
SEQUENCE {
    LCS-MethodType,
    PositioningMethod,
    LCS-ResponseTime,
    LCS-Accuracy
}
OPTIONAL,
BOOLEAN,
BOOLEAN,
EnvironmentCharacterization
}
OPTIONAL

LCS-ResponseTime ::=
ENUMERATED {
    s1, s2, s4, s8, s16,
    s32, s64, s128 }

LCS-TimeOffset ::=
INTEGER (0..4095)

MaxNumberOfReportingCells ::=
ENUMERATED {
    mandatoryCellsOnly,
    mandatoryCellsPlus1,
    mandatoryCellsPlus2,
    mandatoryCellsPlus3,
    mandatoryCellsPlus4,
    mandatoryCellsPlus5,
    mandatoryCellsPlus6 }

MaxReportedCellsOnRACH ::=
ENUMERATED {
    noReport,
    currentCell,
    currentAnd-1-BestNeighbour,
    currentAnd-2-BestNeighbour,
    currentAnd-3-BestNeighbour,
    currentAnd-4-BestNeighbour,
    currentAnd-5-BestNeighbour,
    currentAnd-6-BestNeighbour }

MeasuredResults ::=
    intraFreqMeasuredResultsList
    interFreqMeasuredResultsList
    interSystemMeasuredResultsList
    trafficVolumeMeasuredResultsList
    qualityMeasuredResults
    ue-InternalMeasuredResults
    lcs-MeasuredResults
}
CHOICE {
    IntraFreqMeasuredResultsList,
    InterFreqMeasuredResultsList,
    InterSystemMeasuredResultsList,
    TrafficVolumeMeasuredResultsList,
    QualityMeasuredResults,
    UE-InternalMeasuredResults,
    LCS-MeasuredResults
}

MeasuredResultsList ::=
SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
    MeasuredResults

MeasuredResultsOnRACH ::=
SEQUENCE {
    currentCell
        SEQUENCE {
            modeSpecificInfo
                CHOICE {
                    fdd
                        SEQUENCE {
                            measurementQuantity
                                CHOICE {
                                    CPICH-Ec-N0,
                                    CPICH-RSCP,
                                    CPICH-SIR,
                                    Pathloss
                                }
                        }
                    },
            tdd
                SEQUENCE {
                    timeslotISCP
                        TimeslotISCP,
                    primaryCCPCH-RSCP
                        PrimaryCCPCH-RSCP
                }
            }
        },
    monitoredCells
}
MonitoredCellRACH-List
}
OPTIONAL

MeasurementCommand ::=
    setup
    modify
        measurementType
    },
    release
}
CHOICE {
    MeasurementType,
    SEQUENCE {
        MeasurementType
    }
}
OPTIONAL
NULL

```



```

}

MeasurementControlSysInfo ::=
    intraFreqMeasurementSysInfo
    interFreqMeasurementSysInfo
    interSystemMeasurementSysInfo
    trafficVolumeMeasSysInfo
    ue-InternalMeasurementSysInfo
SEQUENCE {
    IntraFreqMeasurementSysInfo      OPTIONAL,
    InterFreqMeasurementSysInfo      OPTIONAL,
    InterSystemMeasurementSysInfo    OPTIONAL,
    TrafficVolumeMeasSysInfo         OPTIONAL,
    UE-InternalMeasurementSysInfo    OPTIONAL
}

-- **TODO**, not defined yet
MeasurementIdentityNumber ::=
}

MeasurementQuantityGSM ::=
    gsm-CarrierRSSI,
    pathloss }
ENUMERATED {

MeasurementReportingMode ::=
    measurementReportTransferMode
    periodicalOrEventTrigger
SEQUENCE {
    TransferMode,
    PeriodicalOrEventTrigger
}

MeasurementType ::=
    intraFrequencyMeasurement
    interFrequencyMeasurement
    interSystemMeasurement
    lcs-Measurement
    trafficVolumeMeasurement
    qualityMeasurement
    ue-InternalMeasurement
CHOICE {
    IntraFrequencyMeasurement,
    InterFrequencyMeasurement,
    InterSystemMeasurement,
    LCS-Measurement,
    TrafficVolumeMeasurement,
    QualityMeasurement,
    UE-InternalMeasurement
}

MeasurementValidity ::=
    resume-Release
SEQUENCE {
    Resume-Release
}

MonitoredCellRACH-List ::=
SEQUENCE (SIZE(1..7)) OF
    MonitoredCellRACH-Result

MonitoredCellRACH-Result ::=
    sfn-SFN-ObsTimeDifference
    modeSpecificInfo
    fdd
        primaryCPICH-Info
        measurementQuantity
            cpich-Ec-NO
            cpich-RSCP
            cpich-SIR
            pathloss
        }
    },
    tdd
        primaryCCPCH-Info
        primaryCCPCH-RSCP
    }
}
SEQUENCE {
    SFN-SFN-ObsTimeDifference      OPTIONAL,
    CHOICE {
        SEQUENCE {
            PrimaryCPICH-Info,
            CHOICE {
                CPICH-Ec-NO,
                CPICH-RSCP,
                CPICH-SIR,
                Pathloss
            }
        }
        SEQUENCE {
            PrimaryCCPCH-Info,
            PrimaryCCPCH-RSCP
        }
    }
}
OPTIONAL
OPTIONAL

MonitoredSetCellReport ::=
    excludeAll,
    other }
ENUMERATED {

MultipathIndicator ::=
    nm,
    low,
    medium,
    high }
ENUMERATED {

N-CR-T-CRMaxHyst ::=
    n-CR
    t-CRMaxHyst
SEQUENCE {
    INTEGER (1..16)
    T-CRMaxHyst
}
DEFAULT 8,

NavigationModelSatInfo ::=
    satID
    satelliteStatus
    compression
SEQUENCE {
    INTEGER (0..63),
    SatelliteStatus,
    CHOICE {

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        uncompressed      UncompressedNavModel,
        compressed        CompressedNavModel
    }
}

NavigationModelSatInfoList ::= SEQUENCE (SIZE (1..maxN-SAT)) OF
    NavigationModelSatInfo

Neighbor ::= SEQUENCE {
    neighborIdentity      PrimaryCPICH-Info      OPTIONAL,
    neighborQuantity      NeighborQuantity,
    sfn-SFN-ObsTimeDifference2 SFN-SFN-ObsTimeDifference2
}

NeighborList ::= SEQUENCE (SIZE (1..15)) OF
    Neighbor

-- **TODO**, to be defined fully
NeighborQuantity ::= SEQUENCE {

NewInterFreqCell ::= SEQUENCE {
    interFreqCellID      InterFreqCellID      OPTIONAL,
    frequencyInfo        FrequencyInfo      OPTIONAL,
    cellInfo             CellInfo
}

NewInterFreqCellList ::= SEQUENCE (SIZE (1..maxInterCells)) OF
    NewInterFreqCell

NewInterFreqCellSI ::= SEQUENCE {
    interFreqCellID      InterFreqCellID      OPTIONAL,
    frequencyInfo        FrequencyInfo      OPTIONAL,
    cellInfo             CellInfoSI
}

NewInterFreqCellSI-List ::= SEQUENCE (SIZE (1..maxInterCells)) OF
    NewInterFreqCellSI

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

NewInterSystemCellList ::= SEQUENCE (SIZE (1..maxInterSysCells)) OF
    NewInterSystemCell

NewIntraFreqCell ::= SEQUENCE {
    intraFreqCellID      IntraFreqCellID      OPTIONAL,
    cellInfo             CellInfo
}

NewIntraFreqCellList ::= SEQUENCE (SIZE (1..maxIntraCells)) OF
    NewIntraFreqCell

NewIntraFreqCellSI ::= SEQUENCE {
    intraFreqCellID      IntraFreqCellID      OPTIONAL,
    cellInfo             CellInfoSI
}

NewIntraFreqCellSI-List ::= SEQUENCE (SIZE (1..maxIntraCells)) OF
    NewIntraFreqCell

NonUsedFreqParameter ::= SEQUENCE {

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    nonUsedFreqThreshold      Threshold,
    nonUsedFreqW              W
}

NonUsedFreqParameterList ::= SEQUENCE (SIZE (1..maxNonUsedFrequency)) OF
                               NonUsedFreqParameter

ObservedTimeDifferenceToGSM ::= INTEGER (0..4095)

OtherRAT-InSysInfo ::= SEQUENCE {
    rat-Type      RAT-Type,
    k-InterRAT    K-InterRAT
}

OtherRAT-InSysInfoList ::= SEQUENCE (SIZE (1..maxInterRAT)) OF
                              OtherRAT-InSysInfo

OTDOA-SearchWindowSize ::= ENUMERATED {
    c10, c20, c30, c40, c50,
    c60, c70, moreThan70 }

Pathloss ::= INTEGER (46..158)

PenaltyTime ::= CHOICE {
    notUsed      NULL,
    pt10         TemporaryOffset,
    pt20         TemporaryOffset,
    pt30         TemporaryOffset,
    pt40         TemporaryOffset,
    pt50         TemporaryOffset,
    pt60         TemporaryOffset
}

PendingTimeAfterTrigger ::= ENUMERATED {
    ptat0-25, ptat0-5, ptat1,
    ptat2, ptat4, ptat8, ptat16 }

PeriodicalOrEventTrigger ::= ENUMERATED {
    periodical,
    eventTrigger }

PeriodicalReportingCriteria ::= SEQUENCE {
    reportingAmount      ReportingAmount      OPTIONAL,
    reportingInterval    ReportingIntervalLong OPTIONAL
}

-- **TODO**, contents to be defined, source 23.032
PositionEstimate ::= CHOICE {
    ellipsoidPoint      SEQUENCE {},
    ellipsoidPointUncertCircle SEQUENCE {},
    ellipsoidPointUncertEllipse SEQUENCE {},
    ellipsoidPointAltitude SEQUENCE {},
    ellipsoidPointAltitudeEllipse SEQUENCE {}
}

PositioningMethod ::= ENUMERATED {
    otdoa,
    gps,
    otdoaOrGPS }

PRC ::= INTEGER (-32767..32767)

-- **TODO**, not defined yet
PrimaryCCPCH-RSCP ::= SEQUENCE {
}

Q-Accept-s-n ::= INTEGER (0..63)

Q-HCS ::= INTEGER (0..99)

Q-Offset ::= INTEGER (-50..50)

-- Actual value = IE value * 0.5
Q-OffsetS-N ::= INTEGER (-40..40)

-- **TODO**, not defined yet
Q-Min ::= SEQUENCE {
}

```

```

Qmin-FDD ::=                               INTEGER (-20..0)

-- Actual value = IE value * 2 - 115
Qmin-TDD ::=                               INTEGER (0..45)

-- **TODO**, not defined yet
QualityEventResults ::=                   SEQUENCE {
}

-- **TODO**, not defined yet
QualityMeasQuantity ::=                   SEQUENCE {
}

QualityMeasuredResults ::=                 SEQUENCE {
    blerMeasurementResultsList            BLER-MeasurementResultsList            OPTIONAL,
    dl-PhysicalChannelBER                  DL-PhysicalChannelBER                    OPTIONAL,
    sir                                     SIR                                        OPTIONAL
}

QualityMeasurement ::=                     SEQUENCE {
    qualityMeasurementObject               QualityMeasurementObject                 OPTIONAL,
    qualityMeasQuantity                    QualityMeasQuantity                      OPTIONAL,
    qualityReportingQuantity               QualityReportingQuantity                 OPTIONAL,
    reportCriteria                          QualityReportCriteria
}

-- **TODO**, not defined yet
QualityMeasurementObject ::=               SEQUENCE {
}

QualityReportCriteria ::=                  CHOICE {
    qualityReportingCriteria                QualityReportingCriteria,
    periodicalReportingCriteria            PeriodicalReportingCriteria,
    noReporting                             NULL
}

-- **TODO**, not defined yet
QualityReportingCriteria ::=               SEQUENCE {
}

QualityReportingQuantity ::=               SEQUENCE {
    dl-TransChBLER                          BOOLEAN,
    bler-TransChIdList                       BLER-TransChIdList                      OPTIONAL,
    sir                                       BOOLEAN
}

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 }

-- **TODO**, definition to be checked from 23.032
ReferenceCellPosition ::=                  SEQUENCE {
}

ReferenceCellRelation ::=                  ENUMERATED {
    first-12-second-3,
    first-13-second-2,
    first-1-second-23 }

ReferenceGPS-TOW ::=                      INTEGER (0..604700000000)

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)
}

RemovedInterFreqCell ::= SEQUENCE {
    interFreqCellID
}

RemovedInterFreqCellList ::= SEQUENCE (SIZE (1..maxInterCells)) OF
    RemovedInterFreqCell

RemovedInterSystemCell ::= SEQUENCE {
    interSystemCellID
}

RemovedInterSystemCellList ::= SEQUENCE (SIZE (1..maxInterSysCells)) OF
    RemovedInterSystemCell

RemovedIntraFreqCell ::= SEQUENCE {
    intraFreqCellID
}

RemovedIntraFreqCellList ::= SEQUENCE (SIZE (1..maxIntraCells)) OF
    RemovedIntraFreqCell

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 ::= SEQUENCE {
    maxNumberOfReportingCells
    measurement
        CHOICE {
            intraFreq          ReportingCellStatusIntraFreq,
            otherMeasurement    NULL
        }
}

ReportingCellStatusIntraFreq ::= SEQUENCE {
    activeSetCellReport
    monitoredSetCellReport
}

ReportingInfoForCellDCH ::= SEQUENCE {
    intraFreqReportingQuantity
    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-AdditionInfo ::=                       SEQUENCE {
    primaryCPICH-Info                      PrimaryCPICH-Info
}

RL-AdditionInfoList ::=                   SEQUENCE (SIZE(1..maxAddRLcount)) OF
    RL-AdditionInfo

RL-InformationLists ::=                   SEQUENCE {
    rl-AdditionInfoList                    RL-AdditionInfoList                OPTIONAL,
    rl-RemovalInfoList                     RL-RemovalInfoList                OPTIONAL
}

RL-RemovalInfo ::=                       SEQUENCE {
    primaryCPICH-Info                      PrimaryCPICH-Info
}

RL-RemovalInfoList ::=                   SEQUENCE (SIZE(1..maxDelRLcount)) OF
    RL-RemovalInfo

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)

-- **TODO**, not defined yet
RSCP ::=                                  SEQUENCE {
}

SatelliteStatus ::=                     ENUMERATED {
    ns-NN-U,
    es-SN,
    es-NN-U,
    es-NN-C }

SatID ::=                                 INTEGER (0..31)

ScaleFactor ::=                           ENUMERATED {
    prc0-02-rrc0-002,
    prc0-32-rrc0-032 }

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 }

SignallingOption ::=                     CHOICE {
    alternative1                            SEQUENCE {
        q-OffsetS-N                        Q-OffsetS-N                            OPTIONAL
    },
    alternative2                            NULL
}

SIR ::=                                  INTEGER (-10..20)

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 }

-- **TODO**, not defined yet
Threshold ::= SEQUENCE {
}

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 }

-- **TODO**, not defined yet
TimeslotISCP ::= SEQUENCE {
}

TimeslotListWithISCP ::= SEQUENCE (SIZE (1..14)) OF
    TimeslotWithISCP

TimeslotWithISCP ::= SEQUENCE {
    timeslot
    timeslotISCP
}

TimeToTrigger ::= ENUMERATED {
    ttt0, ttt10, ttt20, ttt40, ttt60,
    ttt80, ttt100, ttt120, ttt160,
    ttt200, ttt240, tt320, ttt640,
    ttt1280, ttt2560, ttt5000 }

TrafficVolumeEventParam ::= SEQUENCE {
    eventID
    reportingThreshold
}

TrafficVolumeEventResults ::= SEQUENCE {
    transportChannelCausingEvent
    trafficVolumeEventIdentity
}

TrafficVolumeEventType ::= ENUMERATED {
    e4a,
    e4b }

TrafficVolumeMeasObject ::= SEQUENCE {
    targetTransportChannelID
}

TrafficVolumeMeasObjectList ::= SEQUENCE (SIZE (1..maxTrCHcount)) OF
    TrafficVolumeMeasObject

TrafficVolumeMeasQuantity ::= ENUMERATED {
    rlc-BufferPayload,
    averageRLC-BufferPayload,
    varianceOfRLC-BufferPayload }

TrafficVolumeMeasSysInfo ::= SEQUENCE {
    trafficVolumeMeasurementID MeasurementIdentityNumber OPTIONAL,
    trafficVolumeMeasObjectList TrafficVolumeMeasObjectList OPTIONAL,
    trafficVolumeMeasQuantity TrafficVolumeMeasQuantity OPTIONAL
}

```

```

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..maxTraf)) OF
    TrafficVolumeMeasuredResults

TrafficVolumeMeasurement ::= SEQUENCE {
    t#TrafficVolumeMeasurementObjectList TrafficVolumeMeasurementObjectList OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity       TrafficVolumeReportingQuantity       OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                       TrafficVolumeReportCriteria
}

TrafficVolumeMeasurementObject ::= SEQUENCE {
    targetTransportChannelID           TransportChannelIdentity
}

TrafficVolumeMeasurementObjectList ::= SEQUENCE (SIZE (1..maxTrCHcount)) OF
    TrafficVolumeMeasurementObject

TrafficVolumeReportCriteria ::= CHOICE {
    trafficVolumeReportingCriteria     TrafficVolumeReportingCriteria,
    periodicalReportingCriteria        PeriodicalReportingCriteria,
    noReporting                         NULL
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    transChCriteriaList                TransChCriteriaList           OPTIONAL,
    timeToTrigger                       TimeToTrigger                 OPTIONAL,
    pendingTimeAfterTrigger             PendingTimeAfterTrigger        OPTIONAL,
    tx-InterruptionAfterTrigger         TX-InterruptionAfterTrigger   OPTIONAL,
    reportingAmount                     ReportingAmount                OPTIONAL,
    reportingInterval                   ReportingInterval             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, th1536,
    th2048, th3072, th4096, th6144,
    th8192 }

TransChCriteria ::= SEQUENCE {
    transportChannelID                 TransportChannelIdentity,
    eventSpecificParameters             SEQUENCE (SIZE (1..2)) OF
        TrafficVolumeEventParam           OPTIONAL
}

TransChCriteriaList ::= SEQUENCE (SIZE (1..maxTrCHcount)) 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 ::=
    timeToTrigger
    transmittedPowerThreshold
}

SEQUENCE {
    TimeToTrigger,
    TransmittedPowerThreshold
}

UE-6FG-Event ::=
    timeToTrigger
    ue-RX-TX-TimeDifferenceThreshold
}

SEQUENCE {
    TimeToTrigger,
    UE-RX-TX-TimeDifferenceThreshold
}

UE-AutonomousUpdateMode ::=
    on
    onWithNoReporting
    off
}

CHOICE {
    NULL,
    NULL,
    RL-InformationLists
}

UE-InternalEventParam ::=
    event6a
    event6b
    event6c
    event6d
    event6e
    event6f
    event6g
}

CHOICE {
    UE-6AB-Event,
    UE-6AB-Event,
    TimeToTrigger,
    TimeToTrigger,
    TimeToTrigger,
    UE-6FG-Event,
    UE-6FG-Event
}

UE-InternalEventParamList ::=
SEQUENCE (SIZE (1..maxEventCount)) OF
    UE-InternalEventParam

UE-InternalEventResults ::=
    event6a
    event6b
    event6c
    event6d
    event6e
    event6f
    event6g
}

CHOICE {
    NULL,
    NULL,
    NULL,
    NULL,
    NULL,
    PrimaryCPICH-Info,
    PrimaryCPICH-Info
}

UE-InternalMeasQuantity ::=
    measurementQuantity
    filterCoefficient
}

SEQUENCE {
    UE-MeasurementQuantity,
    FilterCoefficient
}

UE-InternalMeasuredResults ::=
    modeSpecificInfo
        fdd
            ue-TransmittedPowerFDD
            ue-RX-TX-ReportEntryList
        },
        tdd
            ue-TransmittedPowerTDD-List
    }
}

SEQUENCE {
    CHOICE {
        SEQUENCE {
            UE-TransmittedPowerFDD OPTIONAL,
            UE-RX-TX-ReportEntryList OPTIONAL
        },
        SEQUENCE {
            UE-TransmittedPowerTDD-List OPTIONAL
        }
    }
}

UE-InternalMeasurement ::=
    ue-InternalMeasQuantity
    ue-InternalReportingQuantity
    reportCriteria
}

SEQUENCE {
    UE-InternalMeasQuantity OPTIONAL,
    UE-InternalReportingQuantity OPTIONAL,
    UE-InternalReportCriteria
}

UE-InternalMeasurementSysInfo ::=
    ue-InternalMeasurementID
    ue-InternalMeasQuantity
}

SEQUENCE {
    MeasurementIdentityNumber OPTIONAL,
    UE-InternalMeasQuantity
}

UE-InternalReportCriteria ::=
    ue-InternalReportingCriteria
    periodicalReportingCriteria
    noReporting
}

CHOICE {
    UE-InternalReportingCriteria,
    PeriodicalReportingCriteria,
    NULL
}

```

```

UE-InternalReportingCriteria ::= SEQUENCE {
    ue-InternalEventParamList      UE-InternalEventParamList      OPTIONAL
}

UE-InternalReportingQuantity ::= SEQUENCE {
    ue-TransmittedPower            BOOLEAN,
    ue-RX-TX-TimeDifferece        BOOLEAN,
    ue-Position                    BOOLEAN
}

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..maxUsedRLcount)) 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-TransmittedPowerFDD ::= INTEGER (-50..33)

-- **TODO**, not defined yet
UE-TransmittedPowerTDD ::= SEQUENCE {
}

UE-TransmittedPowerTDD-List ::= SEQUENCE (SIZE (1..maxUsedUplTScout)) OF
    UE-TransmittedPowerTDD

UncompressedNavModel ::= SEQUENCE {
    iode          BIT STRING (SIZE (8)),
    t-oe          BIT STRING (SIZE (16)),
    c-rc          BIT STRING (SIZE (16)),
    c-rs          BIT STRING (SIZE (16)),
    c-ic          BIT STRING (SIZE (16)),
    c-is          BIT STRING (SIZE (16)),
    c-uc          BIT STRING (SIZE (16)),
    c-us          BIT STRING (SIZE (16)),
    e             BIT STRING (SIZE (32)),
    m0            BIT STRING (SIZE (32)),
    a-Sqrt        BIT STRING (SIZE (32)),
    delta-n       BIT STRING (SIZE (16)),
    omega0        BIT STRING (SIZE (32)),
    omegaDot      BIT STRING (SIZE (24)),
    i0            BIT STRING (SIZE (32)),
    iDot          BIT STRING (SIZE (14)),
    omega         BIT STRING (SIZE (32)),
    t-oc          BIT STRING (SIZE (16)),
    af0           BIT STRING (SIZE (22)),
    af1           BIT STRING (SIZE (16)),
    af2           BIT STRING (SIZE (8))
}

UTRA-CarrierRSSI ::= INTEGER (-95..-30)

UTRAN-ReferenceTime ::= SEQUENCE {
    gps-TOW       INTEGER (0..6047000000),
    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,
CellSelectReselectInfo,
URA-IdentityList

FROM UTRANMobility-IEs

CapabilityUpdateRequirement,
CPCH-Parameters,
DRAC-SysInfoList,
ProtocolErrorCause,
UE-ConnTimersAndConstants,
UE-IdleTimersAndConstants

FROM UserEquipment-IEs

PreDefRadioConfigurationList

FROM RadioBearer-IEs

PreDefTransChConfiguration

FROM TransportChannel-IEs

AICH-PowerOffset,
ConstantValue,
CPCH-PersistenceLevelsList,
CPCH-SetInfoList,
DynamicPersistenceLevelList,
FrequencyInfo,
IndividualTS-InterferenceList,
MaxAllowedUL-TX-Power,
MidambleConfiguration,
PDSCH-SysInfoList,
PICH-PowerOffset,
PRACH-SystemInformationList,
PreDefPhyChConfiguration,
PrimaryCCPCH-InfoSI,
PrimaryCCPCH-TX-Power,
PUSCH-SysInfoList,
SCCPCH-SystemInformationList,
UL-Interference

FROM PhysicalChannel-IEs

FACH-MeasurementOccasionInfo,
LCS-GPS-AssistanceSIB,
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

maxDataLength,
maxInterSysMessages,
maxNoOfErrors,
maxSysInfoBlockCount,
maxSysInfoBlockFACHcount

FROM Constant-definitions;

BCC ::=

INTEGER (0..7)

BCCH-ModificationInfo ::=
mib-ValueTag

SEQUENCE {
MIB-ValueTag,

```

    bcch-ModificationTime          BCCH-ModificationTime          OPTIONAL
}
-- Actual value = IE value * 2
BCCH-ModificationTime ::=
INTEGER (0..2047)
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    OPTIONAL,
    interSystemMessage            OPTIONAL
}
InterSystemHO-FailureCause ::=
CHOICE {
    configurationUnacceptable      NULL,
    physicalChannelFailure         NULL,
    protocolError                  ProtocolErrorInformation,
    unspecified                     NULL,
    spare                           NULL
}
InterSystemMessage ::=
SEQUENCE {
    systemType          SystemType,
    systemSpecificMessage
        gsm              SEQUENCE {
            gsm-MessageList
        },
        cdma2000          SEQUENCE {
            cdma2000-MessageList
        }
}
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.
    modeSpecificInfo      CHOICE {
        fdd                NULL,
        tdd                SEQUENCE {
            sfn-prime      SFN-Prime
        }
    },
    sib-ReferenceList     SIB-ReferenceList,
    -- Extension mechanism
    non-Release99-Information SEQUENCE {}          OPTIONAL
}
MIB-ValueTag ::=
INTEGER (1..8)
NCC ::=
INTEGER (0..7)
PLMN-ValueTag ::=
INTEGER (1..256)
ProtocolErrorInformation ::=
SEQUENCE {
    diagnosticsType      CHOICE {

```

```

        type1
            protocolErrorCause
        },
        spare
    }
}

ProtocolErrorInformationList ::= SEQUENCE (SIZE (1..maxNoOfErrors)) OF
    ProtocolErrorInformation

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)
                },
            sib-PosOffsetInfo
                SibOFF-List
                OPTIONAL
        }
    }
}

SegCount ::= INTEGER (1..16)

SegmentIndex ::= INTEGER (0..15)

-- Actual value = 2 * IE value
SFN-Prime ::= INTEGER (0..2047)

SIB-Content ::= CHOICE {
    masterInformationBlock
        MasterInformationBlock,
    sysInfoType1
        SysInfoType1,
    sysInfoType2
        SysInfoType2,
    sysInfoType3
        SysInfoType3,
    sysInfoType4
        SysInfoType4,
    sysInfoType5
        SysInfoType5,
    sysInfoType6
        SysInfoType6,
    sysInfoType7
        SysInfoType7,
    sysInfoType8
        SysInfoType8,
    sysInfoType9
        SysInfoType9,
    sysInfoType10
        SysInfoType10,
    sysInfoType11
        SysInfoType11,
    sysInfoType12
        SysInfoType12,
    sysInfoType13
        SysInfoType13,
    sysInfoType13-1
        SysInfoType13-1,
    sysInfoType13-2
        SysInfoType13-2,
    sysInfoType13-3
        SysInfoType13-3,
    sysInfoType13-4
        SysInfoType13-4,
    sysInfoType14
        SysInfoType14,
    sysInfoType15
        SysInfoType15,
    sysInfoType16
        SysInfoType16,
    spare
        SEQUENCE {}
}

SIB-Data ::= BIT STRING (SIZE (1..maxDataLength))

SIB-Reference ::= SEQUENCE {
    schedulingInformation
        SchedulingInformation
}

SIB-ReferenceList ::= SEQUENCE (SIZE (1..maxSysInfoBlockCount)) OF
    SIB-Reference

SIB-ReferenceListFACH ::= SEQUENCE (SIZE (1..maxSysInfoBlockFACHcount)) OF
    SIB-Reference

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,
systemInformationBlockType16,
spare1, spare2, spare3 }

SIB-TypeAndTag ::=
  sysInfoType1
  sysInfoType2
  sysInfoType3
  sysInfoType4
  sysInfoType5
  sysInfoType6
  sysInfoType7
  sysInfoType8
  sysInfoType9
  sysInfoType10
  sysInfoType11
  sysInfoType12
  sysInfoType13
  sysInfoType13-1
  sysInfoType13-2
  sysInfoType13-3
  sysInfoType13-4
  sysInfoType14
  sysInfoType15
  sysInfoType16
}

CHOICE {
  PLMN-ValueTag,
  PLMN-ValueTag,
  CellValueTag,
  CellValueTag,
  CellValueTag,
  CellValueTag,
  NULL,
  NULL,
  NULL,
  NULL,
  CellValueTag,
  CellValueTag,
  CellValueTag,
  CellValueTag,
  CellValueTag,
  CellValueTag,
  CellValueTag,
  NULL,
  NULL,
  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 {
    -- Core network IEs
    cn-CommonGSM-MAP-NAS-SysInfo  NAS-SystemInformationGSM-MAP,
    cn-DomainSysInfoList          CN-DomainSysInfoList,
    -- User equipment IEs
    ue-IdleTimersAndConstants     UE-IdleTimersAndConstants,
    -- Extension mechanism
    non-Release99-Information     SEQUENCE {} OPTIONAL
  }

SysInfoType2 ::=
  SEQUENCE {
    -- UTRAN mobility IEs
    ura-IdentityList             URA-IdentityList,
    -- User equipment IEs
    ue-ConnTimersAndConstants    UE-ConnTimersAndConstants,
    -- Extension mechanism
    non-Release99-Information     SEQUENCE {} OPTIONAL
  }

SysInfoType3 ::=
  SEQUENCE {
    -- Other IEs
    sib-ReferenceList            SIB-ReferenceList OPTIONAL,
    -- UTRAN mobility IEs
    cellIdentity                 CellIdentity,
  }

```

```

        cellSelectReselectInfo      CellSelectReselectInfo,
        cellAccessRestriction      CellAccessRestriction,
-- Extension mechanism
        non-Release99-Information  SEQUENCE {}                OPTIONAL
    }

SysInfoType4 ::=                      SEQUENCE {
-- Other IEs
        sib-ReferenceList          SIB-ReferenceList          OPTIONAL,
-- UTRAN mobility IEs
        cellIdentity               CellIdentity,
        cellSelectReselectInfo     CellSelectReselectInfo,
        cellAccessRestriction      CellAccessRestriction,
-- Extension mechanism
        non-Release99-Information  SEQUENCE {}                OPTIONAL
    }

SysInfoType5 ::=                      SEQUENCE {
-- Other IEs
        sib-ReferenceList          SIB-ReferenceList          OPTIONAL,
-- Physical channel IEs
        frequencyInfo              FrequencyInfo             OPTIONAL,
        maxAllowedUL-TX-Power      MaxAllowedUL-TX-Power  OPTIONAL,
        modeSpecificInfo           CHOICE {
            fdd                     NULL,
            tdd                     SEQUENCE {
                midambleConfiguration  MidambleConfiguration  OPTIONAL
            }
        },
        primaryCCPCH-Info          PrimaryCCPCH-InfoSI    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
        non-Release99-Information  SEQUENCE {}                OPTIONAL
    }

SysInfoType6 ::=                      SEQUENCE {
-- Other IEs
        sib-ReferenceList          SIB-ReferenceList          OPTIONAL,
-- Physical channel IEs
        frequencyInfo              FrequencyInfo             OPTIONAL,
        maxAllowedUL-TX-Power      MaxAllowedUL-TX-Power  OPTIONAL,
        primaryCCPCH-Info          PrimaryCCPCH-InfoSI    OPTIONAL,
        modeSpecificInfo           CHOICE {
            fdd                     SEQUENCE {
                pich-PowerOffset      PICH-PowerOffset,
                aich-PowerOffset      AICH-PowerOffset
            },
            tdd                     SEQUENCE {
                pusch-SysInfo         PUSCH-SysInfoList     OPTIONAL,
                pdsch-SysInfo         PDSCH-SysInfoList     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
        non-Release99-Information  SEQUENCE {}                OPTIONAL
    }

SysInfoType7 ::=                      SEQUENCE {
-- 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
        non-Release99-Information  SEQUENCE {}                OPTIONAL
    }

```

```

SysInfoType8 ::=                               SEQUENCE {
  -- User equipment IEs
  cpch-Parameters                               CPCH-Parameters,
  -- Physical channel IEs
  cpch-SetInfoList                             CPCH-SetInfoList,
  -- Extension mechanism
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

SysInfoType9 ::=                               SEQUENCE {
  -- Physical channel IEs
  cpch-PersistenceLevelsList                   CPCH-PersistenceLevelsList,
  -- Extension mechanism
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

SysInfoType10 ::=                             SEQUENCE {
  -- User equipment IEs
  drac-SysInfoList                             DRAC-SysInfoList,
  -- Extension mechanism
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

SysInfoType11 ::=                             SEQUENCE {
  -- Other IEs
  sib-ReferenceList                            SIB-ReferenceList                            OPTIONAL,
  -- Measurement IEs
  fach-MeasurementOccasionInfo                 FACH-MeasurementOccasionInfo                 OPTIONAL,
  measurementControlSysInfo                    MeasurementControlSysInfo,
  -- Extension mechanism
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

SysInfoType12 ::=                             SEQUENCE {
  -- Other IEs
  sib-ReferenceList                            SIB-ReferenceList                            OPTIONAL,
  -- Measurement IEs
  fach-MeasurementOccasionInfo                 FACH-MeasurementOccasionInfo                 OPTIONAL,
  measurementControlSysInfo                    MeasurementControlSysInfo,
  -- Extension mechanism
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

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
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

SysInfoType13-1 ::=                           SEQUENCE {
  -- ANSI-41 IEs
  ansi-41-RAND-Information                      ANSI-41-RAND-Information,
  -- Extension mechanism
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

SysInfoType13-2 ::=                           SEQUENCE {
  -- ANSI-41 IEs
  ansi-41-UserZoneID-Information               ANSI-41-UserZoneID-Information,
  -- Extension mechanism
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

SysInfoType13-3 ::=                           SEQUENCE {
  -- ANSI-41 IEs
  ansi-41-PrivateNeighborListInfo              ANSI-41-PrivateNeighborListInfo,
  -- Extension mechanism
  non-Release99-Information                     SEQUENCE {}                                OPTIONAL
}

SysInfoType13-4 ::=                           SEQUENCE {

```



```

-- ANSI-41 IEs
  ansi-41-GlobalServiceRedirectInfo
                                ANSI-41-GlobalServiceRedirectInfo,
-- Extension mechanism
  non-Release99-Information      SEQUENCE {}                                OPTIONAL
}

SysInfoType14 ::=                SEQUENCE {
-- Other IEs
  sib-ReferenceList              SIB-ReferenceList                        OPTIONAL,
-- Physical channel IEs
  primaryCCPCH-TX-Power          PrimaryCCPCH-TX-Power              OPTIONAL,
  individualTS-InterferenceList IndividualTS-InterferenceList,
  rach-ConstantValue            ConstantValue                    OPTIONAL,
  dpch-ConstantValue            ConstantValue                    OPTIONAL,
  usch-ConstantValue            ConstantValue                    OPTIONAL,
-- Extension mechanism
  non-Release99-Information      SEQUENCE {}                                OPTIONAL
}

SysInfoType15 ::=                SEQUENCE {
-- Other IEs
  sib-ReferenceList              SIB-ReferenceList                        OPTIONAL,
-- Measurement IEs
  lcs-GPS-Assistance            LCS-GPS-AssistanceSIB          OPTIONAL,
  lcs-OTDOA-Assistance          LCS-OTDOA-AssistanceSIB        OPTIONAL,
-- Extension mechanism
  non-Release99-Information      SEQUENCE {}                                OPTIONAL
}

SysInfoType16 ::=                SEQUENCE {
-- Other IEs
  sib-ReferenceList              SIB-ReferenceList                        OPTIONAL,
-- Radio bearer IEs
  preDefinedRadioConfigurations PreDefRadioConfigurationList,
-- Transport channel IEs
  preDefTransChConfiguration    PreDefTransChConfiguration,
-- Physical channel IEs
  preDefPhyChConfiguration      PreDefPhyChConfiguration,
-- Extension mechanism
  non-Release99-Information      SEQUENCE {}                                OPTIONAL
}

SystemType ::=                  ENUMERATED {
                                gsm, cdma2000,
                                spare1, spare2, spare3, spare4,
                                spare5, spare6, spare7, spare8,
                                spare9, spare10, spare11,
                                spare12, spare13, spare14 }

```

END

11.3.9 ANSI-41 information elements

ANSI-41-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

ansi41MaxLength
FROM Constant-definitions;

ANSI-41-GlobalServiceRedirectInfo ::= BIT STRING (SIZE (1..ansi41MaxLength))

ANSI-41-PrivateNeighborListInfo ::= BIT STRING (SIZE (1..ansi41MaxLength))

ANSI-41-RAND-Information ::= BIT STRING (SIZE (1..ansi41MaxLength))

ANSI-41-UserZoneID-Information ::= BIT STRING (SIZE (1..ansi41MaxLength))

Min-P-REV ::= BIT STRING (SIZE (8))

NAS-SystemInformationANSI-41 ::= BIT STRING (SIZE (1..ansi41MaxLength))

NID ::= BIT STRING (SIZE (16))

P-REV ::= BIT STRING (SIZE (8))

```
SID ::=                                BIT STRING (SIZE (15))  
END
```

11.4 Constant definitions

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

```
BEGIN  
  
-- **TODO**  
algorithmCount                INTEGER ::= 8  
  
-- **TODO**  
ansi41MaxLength              INTEGER ::= 64  
  
-- **TODO**  
maxAddTFC-Count              INTEGER ::= 8  
  
-- **TODO**  
maxAdditionalMeas            INTEGER ::= 8  
  
-- **TODO**  
maxAddRLcount                INTEGER ::= 8  
  
-- **TODO**  
maxAlgoTypeCount            INTEGER ::= 8  
  
-- **TODO**  
maxAP-SigNum                 INTEGER ::= 8  
  
-- **TODO**  
maxAP-SubCH                  INTEGER ::= 8  
  
-- **TODO**  
maxBLER                      INTEGER ::= 8  
  
-- **TODO**  
maxCCTrCH-Count             INTEGER ::= 8  
  
-- **TODO**  
maxCCTrCHcount              INTEGER ::= 8  
  
-- **TODO**  
maxCellCount                INTEGER ::= 8  
  
-- **TODO**  
maxCellsForbidden           INTEGER ::= 8  
  
-- **TODO**  
maxChanCount                INTEGER ::= 8  
  
-- **TODO**  
maxCNdomains                 INTEGER ::= 8  
  
-- **TODO**  
maxCodeCount                INTEGER ::= 8  
  
-- **TODO**  
maxCodeNum                  INTEGER ::= 8  
  
-- **TODO**  
maxCodeNumComp-1           INTEGER ::= 8  
  
maxCombineSet                INTEGER ::= 8  
  
-- **TODO**  
maxCPCH-SetCount           INTEGER ::= 8  
  
-- **TODO**  
maxCPCHsetcount            INTEGER ::= 8  
  
-- **TODO**  
maxCTFC                     INTEGER ::= 8  
  
-- **TODO**
```

```
maxCTFC-DCH                INTEGER ::= 8
-- **TODO**
maxCTFC-DSCH                INTEGER ::= 8
-- **TODO**
maxDataLength              INTEGER ::= 8
-- **TODO**
maxDelRLcount              INTEGER ::= 8
-- **TODO**
maxDelTFC-Count            INTEGER ::= 8
-- **TODO**
maxDelTrCHcount            INTEGER ::= 8
-- **TODO**
maxDL-CCTrCHcount          INTEGER ::= 8
-- **TODO**
maxDPDCHcount              INTEGER ::= 8
-- **TODO**
maxDRAC-Classes            INTEGER ::= 8
-- **TODO**
maxDRACReconAddTrCHcount   INTEGER ::= 8
-- **TODO**
maxEventCount              INTEGER ::= 8
-- **TODO**
maxFACH-Count              INTEGER ::= 8
-- **TODO**
maxFACHcount               INTEGER ::= 8
-- **TODO**
maxFlowID                  INTEGER ::= 8
-- **TODO**
maxFreqCount               INTEGER ::= 8
-- **TODO**
maxFrequencyBandsCount     INTEGER ::= 8
-- **TODO**
maxInterCells              INTEGER ::= 8
-- **TODO**
maxInterRAT                INTEGER ::= 8
-- **TODO**
maxInterSys                INTEGER ::= 8
-- **TODO**
maxInterSysCells           INTEGER ::= 8
-- **TODO**
maxInterSysMessages        INTEGER ::= 8
-- **TODO**
maxIntervals               INTEGER ::= 8
-- **TODO**
maxIntraCells              INTEGER ::= 8
-- **TODO**
maxMeasurementTypeCount    INTEGER ::= 8
-- **TODO**
maxMidambleShift-1        INTEGER ::= 8
-- **TODO**
maxMuxOptionsCount         INTEGER ::= 8
-- **TODO**
```

```
maxN-BadSAT                INTEGER ::= 8
-- **TODO**
maxN-SAT                    INTEGER ::= 8
-- **TODO**
maxNoCells                  INTEGER ::= 8
-- **TODO**
maxNoCNdomains              INTEGER ::= 8
-- **TODO**
maxNoCodeGroups             INTEGER ::= 8
-- **TODO**
maxNonUsedFrequency         INTEGER ::= 8
-- **TODO**
maxNoOfErrors               INTEGER ::= 8
-- **TODO**
maxNoSystemCapability       INTEGER ::= 8
-- **TODO**
maxNoTFCI-Groups           INTEGER ::= 8
-- **TODO**
maxNumFreq                  INTEGER ::= 8
-- **TODO**
maxOtherRBcount            INTEGER ::= 8
-- **TODO**
maxPCPCHs                  INTEGER ::= 8
-- **TODO**
maxPDSCHcount              INTEGER ::= 8
-- **TODO**
maxPRACHcount              INTEGER ::= 8
-- **TODO**
maxPredefConfigCount       INTEGER ::= 8
-- **TODO**
maxPUSCHcount              INTEGER ::= 8
-- **TODO**
maxRABcount                 INTEGER ::= 8
maxRAT                      INTEGER ::= 4
-- **TODO**
maxRAT-Count               INTEGER ::= 8
-- **TODO**
maxRB-WithPDCPcount        INTEGER ::= 8
-- **TODO**
maxRBcount                  INTEGER ::= 8
-- **TODO**
maxReconAddTrCHcount       INTEGER ::= 8
-- **TODO**
maxReconRBcount            INTEGER ::= 8
-- **TODO**
maxReconRBs                 INTEGER ::= 8
-- **TODO**
maxRelRBcount              INTEGER ::= 8
-- **TODO**
maxReplaceCount            INTEGER ::= 8
-- **TODO**
maxRLcount                  INTEGER ::= 8
```

```
maxRM                INTEGER ::= 256

-- **TODO**
maxRstTrCH-Count    INTEGER ::= 8

-- **TODO**
maxSCCPCHcount      INTEGER ::= 8

-- **TODO**
maxSetupRBcount     INTEGER ::= 8

-- **TODO**
maxSF-Num           INTEGER ::= 8

-- **TODO**
maxSigNum           INTEGER ::= 8

-- **TODO**
maxSRBcount         INTEGER ::= 8

-- **TODO**
maxSubChNum         INTEGER ::= 8

-- **TODO**
maxSysInfoBlockCount  INTEGER ::= 8

-- **TODO**
maxSysInfoBlockFACHcount  INTEGER ::= 8

-- **TODO**
maxTF-Count         INTEGER ::= 8

-- **TODO**
maxTF-Value         INTEGER ::= 8

-- **TODO**
maxTFC-Count        INTEGER ::= 8

-- **TODO**
maxTFC-Value        INTEGER ::= 8

-- **TODO**
maxTFC-Value-1      INTEGER ::= 8

-- **TODO**
maxTFCI-1-Combs     INTEGER ::= 8

-- **TODO**
maxTFCI-2-Combs     INTEGER ::= 8

-- **TODO**
maxTFCI-Value       INTEGER ::= 8

-- **TODO**
maxTFcount          INTEGER ::= 8

-- **TODO**
maxTFs              INTEGER ::= 8

-- **TODO**
maxTimeslotCount    INTEGER ::= 8

-- **TODO**
maxTraf             INTEGER ::= 8

-- **TODO**
maxTrCH             INTEGER ::= 8

-- **TODO**
maxTrChCount        INTEGER ::= 8

-- **TODO**
maxTrCHcount        INTEGER ::= 8

-- **TODO**
maxTrChValue        INTEGER ::= 8
```

```
-- **TODO**
maxTScount                INTEGER ::= 14

-- **TODO**
maxTSperCCTrCHcount      INTEGER ::= 8

-- **TODO**
maxTStoMeasureCount      INTEGER ::= 8

-- **TODO**
maxUL-CCTrCHcount        INTEGER ::= 8

-- **TODO**
maxURAcount              INTEGER ::= 8

-- **TODO**
maxUsedUplTScout         INTEGER ::= 8

-- **TODO**
maxUsedRLcount           INTEGER ::= 8

-- **TODO**
pageCount                INTEGER ::= 8

END
```

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 313r2

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG-RAN #8**
list expected approval meeting # here ↑

for approval
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: (U)SIM ME UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 28 February 2000

Subject: DRX cycle lower limit

Work item:

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

Reason for change: The case when same DRX cycle parameter is used for both idle and connected mode is very undesirable. It may be acceptable to have a longish response time in normal paging whereas it may be a requirement to have fast response times in connected mode.

Actions:

- Split the DRX cycle parameter into two, one for idle and one for connected mode.
- Put a lower limit of k=6 (corresponds to a cycle of 640ms) on the idle mode DRX cycle length.
- Put a lower limit of k=3 (corresponds to a cycle of 80ms) on the connected mode DRX cycle length.

In addition, the DRX cycle length related issues have been corrected in the ASN.1 definitions of Radio Bearer Reconfiguration, RNTI Reallocation and RRC Connection Re-establishment.

Clauses affected: 8.5.7.3.2, 10.2.5, 10.2.18, 10.2.26, 10.2.29, 10.2.42, 10.2.51, 10.2.62, 10.3.1.2, 10.3.3.9, 10.3.3.X, 10.3.7.8, 11.2, 11.3.1, 11.3.3, 11.3.7

Other specs affected:

Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
MS test specifications	<input type="checkbox"/>	→ List of CRs:	
BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
O&M specifications	<input type="checkbox"/>	→ List of CRs:	

Other comments:



help.doc

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

8.5.7.3.2 UTRAN DRX Cycle length coefficient

If the IE "UTRAN DRX cycle length coefficient" is present, the UE shall use it to calculate the UTRAN DRX cycle length, according to the following:

Set k to the value of the IE "UTRAN DRX cycle length coefficient".

Store the result of $2^k * \text{PBP}$, where PBP is the Paging Block Periodicity, as the DRX cycle length.

The UE shall determine its connected mode paging occasions and PICH monitoring occasions in the same way as for idle mode, according to TS 25.304.

The DRX cycle length to use in connected mode is the shortest of the following:

- UTRAN DRX cycle length;
- CN domain specific DRX cycle length stored for any CN domain, when using Discontinuous Reception (DRX) in CELL_PCH and URA_PCH state.

The CN domain specific DRX cycle length stored for any CN domain is only used in Cell_PCH state and URA_PCH state if the UE is registered to that CN domain and no signalling connection exist to that CN domain.

10.2.5 CELL UPDATE CONFIRM

This message confirms the cell update procedure and can be used to reallocate new RNTI information for the UE valid in the new cell.

RLC-SAP: UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing DRX cycle length coefficient
RLC re-configuration indicator (for C-plane)	MD		RLC re-configuration indicator 10.3.3.36	Default value is the existing RLC re-configuration indicator for C-plane
RLC re-configuration indicator (for U-plane)	MD		RLC re-configuration indicator 10.3.3.36	Default value is the existing RLC re-configuration indicator for U-plane
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
UTRAN Information Elements				
URA identity	OP		URA identity 10.3.2.5	
RB information elements				
RB with PDCP information list	OP	1 to <MaxRBWithPDCPCo unt>		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 10.3.4.17	
PhyCH information elements				
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
PRACH Info (for RACH)	OP		PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information for one radio link	OP		Downlink information for each radio link	

Information Element	Need	Multi	Type and reference	Semantics description
			10.3.6.18	

Multi Bound	Explanation
<i>MaxRBWithPDCPCount</i>	Maximum number of radio bearers which can have PDCP entity configured

10.2.18 PHYSICAL CHANNEL RECONFIGURATION

This message is used by UTRAN to assign, replace or release a set of physical channels used by a UE.
RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
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 <MaxRBWithPDCPCo unt>		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 10.3.4.17	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing value of the maximum allowed UL TX power
CHOICE <i>channel requirement</i>	OP			At least one criticality=reject spare value needed for future extension
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information common	OP		Downlink	

Information Element	Need	Multi	Type and reference	Semantics description
for all radio links			information common for all radio links 10.3.6.17	
Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
> TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
<i>MaxRBWithPDCPCount</i>	Maximum number of radio bearers which can have PDCP entity configured
<i>MaxRLcount</i>	Maximum number of radio links to be set up

10.2.26 RADIO BEARER RELEASE

NOTE: Functional description of this message to be included here.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
RB information to release list	MP	1 to <MaxRelRBcount>		
>RB information to release	MP		RB information to release 10.3.4.14	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL	

Information Element	Need	Multi	Type and reference	Semantics description
			TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconfAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>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 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	

Information Element	Need	Multi	Type and reference	Semantics description
Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
CHOICE mode	MP			
>FDD				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
<i>MaxRLcount</i>	Maximum number of radio links
<i>MaxRelRBcount</i>	Maximum number of RBs to be released
<i>MaxOtherRBcount</i>	Maximum number of Other RBs (i.e., RBs not being released) affected by the procedure
<i>MaxDelTrCHcount</i>	Maximum number of Transport CHannels to be removed
<i>MaxSysInfoBlockFACHCount</i>	Maximum number of references to system information blocks on the FACH
<i>MaxReconfAddTrCHCount</i>	Maximum number of transport channels to add and reconfigure
<i>MaxDRACReconAddTrCHCount</i>	Maximum number of transport channels to add and reconfigure for DRAC

10.2.29 RADIO BEARER SETUP

NOTE: Functional description of this message to be included here.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
Signalling RB information to setup list	OP	1 to <MaxSRBcount>		For each signalling radio bearer established
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
RAB information to setup list	MP	1 to <MaxRABcount>		For each RAB established
>RAB information for setup	MP		RAB information to setup 10.3.4.9	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information	

Information Element	Need	Multi	Type and reference	Semantics description
			common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconfAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>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 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info	

Information Element	Need	Multi	Type and reference	Semantics description
			(for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxRLcount	Maximum number of radio links
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconfAddcount	Maximum number of Transport CHannels reconfigured or added
MaxDRACReconfAddcount	Maximum number of Transport CHannels reconfigured or added for DRAC
MaxSRBcount	Maximum number of signalling RBs that could be setup with this message
MaxRABcount	Maximum number of RABs that could be setup with this message
MaxRBcount	Maximum number of RBs pre RAB that could be setup with this message
MaxOtherRBcount	Maximum number of Other RBs (i.e., RBs not being released) affected by the procedure

10.2.42 RRC CONNECTION SETUP

This message is used by the network to accept the establishment of an RRC connection for an UE, including assignment of signalling link information, transport channel information and optionally physical channel information.

RLC-SAP: UM

Logical channel: CCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Initial UE identity	MP		Initial UE identity 10.3.3.15	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	MP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
UTRAN DRX cycle length coefficient	MP		UTRAN DRX cycle length coefficient 10.3.3.9	
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
Capability update requirement	MD		Capability update requirement 10.3.3.2	Default value is defined in subclause 10.3.3.3
RB Information Elements				
Signalling RB information to setup list	MP	3 to 4		Information for signalling radio bearers, in the order RB 0 up to 3.
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Added or Reconfigured TrCH information list	MP	1 to <MaxReconfAddTrCH Count>		
>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	OP		DL Transport channel information common for all transport channels 10.3.5.7	
Added or Reconfigured TrCH information list	MP	1 to <MaxReco		

Information Element	Need	Multi	Type and reference	Semantics description
		nfAddTrCH Count>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxReconfAddTrCHCount	Maximum number of new transport channels to set
MaxRLcount	Maximum number of radio links to be set up

10.2.51 TRANSPORT CHANNEL RECONFIGURATION

This message is used by UTRAN to configure the transport channel of a UE. This also includes a possible reconfiguration of physical channels. The message can also be used to assign a TFC subset and reconfigure physical channel.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
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 <MaxRBWithPDCPCount>		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 10.3.4.17	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Added or Reconfigured TrCH information list	MP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	

Information Element	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRA CReconAd dTrCHCou nt>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>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 10.3.5.7	
Added or Reconfigured TrCH information list	MP	1 to <MaxReco nfAddTrCH Count>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigur ed DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPCH set Info	OP		CPCH set Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLco unt>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
<i>MaxRBWithPDCPCount</i>	Maximum number of radio bearers which can have PDCP entity configured
<i>MaxRLcount</i>	Maximum number of radio links to be set up
<i>MaxReconAddCount</i>	Maximum number of Transport Channels reconfigured or added
<i>MaxDRACReconAddCount</i>	Maximum number of Transport Channels reconfigured or added for DRAC

10.2.62 URA UPDATE CONFIRM

This message confirms the URA update procedure and can be used to reallocate new RNTI information for the UE valid after the URA update.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element	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 10.3.3.16	Integrity check info is included if integrity protection is applied
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MDP		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
UTRAN mobility information elements				
URA identity	OP		URA identity 10.3.2.5	
RB information elements				
RB with PDCP information list	OP	1 to <MaxRBWithPDCPCount>		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 10.3.4.17	

Condition	Explanation
<i>MaxRBWithPDCPCount</i>	Maximum number of radio bearers which can have PDCP entity configured
<i>CCCH</i>	This IE is only sent when CCCH is used

10.3.1.2 CN Domain System Information

Information element	Need	Multi	Type and reference	Semantics description
CN domain identity	MP		CN domain identity 10.3.1.1	
CHOICE CN Type	MP			
>GSM-MAP				
>>CN domain specific NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
>ANSI-41				
>>CN domain specific NAS system information	MP		ANSI-41 NAS system information, 10.3.9.3	
CN domain specific DRX cycle length coefficient	MP		CN domain specific DRX cycle length coefficient , 10.3.3.9X	

10.3.3.9 [UTRAN](#) DRX cycle length coefficient

A coefficient in the formula to count the paging occasions to be used by a specific UE (specified in 25.304).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRAN DRX cycle length coefficient	MP		Integer(32...12)	Refers to 'k' in the formula as specified in 25.304, Discontinuous reception

[10.3.3.X](#) [CN domain specific DRX cycle length coefficient](#)

[A coefficient in the formula to count the paging occasions to be used by a specific UE \(specified in 25.304\).](#)

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CN domain specific DRX cycle length coefficient	MP		Integer(6...12)	Refers to 'k' in the formula as specified in 25.304, Discontinuous reception

10.3.7.8 FACH measurement occasion info

This IE is for FDD only.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
k_UTRA	MP		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Other RAT present in inter-system cell info		1 to <MaxInterRat>		
>RAT type	MP		Enumerated(GSM, IS2000)	At least 14 spare values, Criticality: Reject, are needed
>k_Inter_Rat	MP		Integer(0..12)	

Multi Bound	Explanation
MaxInterRat	Maximum number of other radio access technologies that can be present in the inter-system cell info

11.2 PDU definitions

IMPORTS

```

ActivationTime,
C-RNTI,
CapabilityUpdateRequirement,
CellUpdateCause,
CipheringAlgorithm,
CipheringModeInfo,
DRX-CycleLengthCoefficient,
DRX-Indicator,
EstablishmentCause,
FailureCauseWithProtErr,
HyperFrameNumber,
InitialUE-Capability,
InitialUE-Identity,
IntegrityProtActivationInfo,
IntegrityProtectionModeInfo,
PagingCause,
PagingRecordList,
ProtocolErrorIndicator,
ProtocolErrorIndicatorWithInfo,
Re-EstablishmentTimer,
RedirectionInfo,
RejectionCause,
ReleaseCause,
RLC-ReconfigurationIndicator,
RRC-MessageTX-Count,
U-RNTI,
U-RNTI-Short,
UE-RadioAccessCapability,
URA-UpdateCause,
UTRAN-DRX-CycleLengthCoefficient,
WaitTime

```

FROM UserEquipment-IEs

```

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

```

CellUpdateConfirm ::= 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-ReconfIndicatorC-Plane     RLC-ReconfigurationIndicator,
  rlc-ReconfIndicatorU-Plane     RLC-ReconfigurationIndicator,
-- 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
  maxAllowedUL-TX-Power MaxAllowedUL-TX-Power      OPTIONAL,
  prach-RACH-Info      PRACH-RACH-Info          OPTIONAL,
  dl-InformationPerRL  DL-InformationPerRL      OPTIONAL,
-- Extension mechanism
  non-Release99-Information SEQUENCE {}      OPTIONAL
}

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

PhysicalChannelReconfiguration ::= 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,
  re-EstablishmentTimer      Re-EstablishmentTimer          OPTIONAL,
-- Core network IEs
  cn-InformationInfo         CN-InformationInfo                  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 and PRACH info for RACH.
  dl-CommonInformation       DL-CommonInformation              OPTIONAL,
  dl-PDSCH-Information       DL-PDSCH-Information              OPTIONAL,
  modeSpecificInfo           CHOICE {
    fdd                       SEQUENCE {
      cpch-SetInfo            CPCH-SetInfo                OPTIONAL
    },
    tdd                       NULL
  },
  dl-InformationPerRL-List   DL-InformationPerRL-List,
-- Extension mechanism
  non-Release99-Information  SEQUENCE {}                        OPTIONAL
}

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

RadioBearerReconfiguration ::= 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,
  re-EstablishmentTimer      Re-EstablishmentTimer          OPTIONAL,
-- Core network IEs
  cn-InformationInfo         CN-InformationInfo                  OPTIONAL,
-- Radio bearer IEs
  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
  }
  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,
  dl-CommonInformation    DL-CommonInformation  OPTIONAL,
  dl-PDSCH-Information    DL-PDSCH-Information  OPTIONAL,
  modeSpecificPhysChInfo CHOICE {
    fdd                   SEQUENCE {
      cpch-SetInfo        CPCH-SetInfo          OPTIONAL
    },
    tdd                   NULL
  },
  dl-InformationPerRL-List DL-InformationPerRL-List,
-- Extension mechanism
  non-Release99-Information SEQUENCE {}          OPTIONAL
}

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

RadioBearerRelease ::= 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,
  re-EstablishmentTimer      Re-EstablishmentTimer          OPTIONAL,
-- Core network IEs
  cn-InformationInfo          CN-InformationInfo              OPTIONAL,
-- Radio bearer IEs
  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
  }
  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,
  dl-CommonInformation    DL-CommonInformation  OPTIONAL,
  dl-PDSCH-Information    DL-PDSCH-Information  OPTIONAL,
  modeSpecificPhysChInfo CHOICE {
    fdd                   SEQUENCE {
      cpch-SetInfo        CPCH-SetInfo          OPTIONAL
    },
    tdd                   NULL
  },
  dl-InformationPerRL-List DL-InformationPerRL-List,
-- Extension mechanism
  non-Release99-Information SEQUENCE {}          OPTIONAL
}

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

RadioBearerSetup ::= 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,
  re-EstablishmentTimer      Re-EstablishmentTimer          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
  }
  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,
  dl-CommonInformation        DL-CommonInformation        OPTIONAL,
  dl-PDSCH-Information        DL-PDSCH-Information        OPTIONAL,
  modeSpecificPhysChInfo     CHOICE {
    fdd                         SEQUENCE {
      cpch-SetInfo              CPCH-SetInfo              OPTIONAL
    },
    tdd                         NULL
  },
  dl-InformationPerRL-List    DL-InformationPerRL-List,
-- Extension mechanism
  non-Release99-Information    SEQUENCE {}                 OPTIONAL
}

-- *****
--
-- RNTI REALLOCATION
--
-- *****

RNTIReallocation ::= 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,
-- Radio bearer IEs
  rb-WithPDCP-InfoList     RB-WithPDCP-InfoList       OPTIONAL,
-- Extension mechanism
  non-Release99-Information SEQUENCE {}                 OPTIONAL
}

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

RRCConnectionReEstablishment ::= 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,
  re-EstablishmentTimer     Re-EstablishmentTimer       OPTIONAL,
-- 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,
dl-CommonInformation        DL-CommonInformation       OPTIONAL,
dl-PDSCH-Information        DL-PDSCH-Information       OPTIONAL,
modeSpecificPhysChInfo      CHOICE {
  fdd                        SEQUENCE {
    cpch-SetInfo              CPCH-SetInfo          OPTIONAL
  },
  tdd                        NULL
},
dl-InformationPerRL-List    DL-InformationPerRL-List,
-- Extension mechanism
non-Release99-Information   SEQUENCE {}          OPTIONAL
}

```

```

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

```

```

RRCConnectionSetup ::= SEQUENCE {
  -- 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,
  re-EstablishmentTimer     Re-EstablishmentTimer    OPTIONAL,
  capabilityUpdateRequirement CapabilityUpdateRequirement OPTIONAL,
  -- 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,
  -- Extension mechanism
  non-Release99-Information SEQUENCE {}          OPTIONAL
}

```

```

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

```

```

TransportChannelReconfiguration ::= 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,
  re-EstablishmentTimer     Re-EstablishmentTimer    OPTIONAL,
  -- Core network IEs
  cn-InformationInfo        CN-InformationInfo          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
    }
    dl-CommonTransChInfo          DL-CommonTransChInfo          OPTIONAL,
    dl-AddReconfTransChInfoList  DL-AddReconfTransChInfoList, OPTIONAL,
-- Physical channel IEs
    frequencyInfo                FrequencyInfo                OPTIONAL,
    maxAllowedUL-TX-Power        MaxAllowedUL-TX-Power    OPTIONAL,
    ul-ChannelRequirement        UL-ChannelRequirement    OPTIONAL,
    dl-CommonInformation          DL-CommonInformation      OPTIONAL,
    dl-PDSCH-Information          DL-PDSCH-Information      OPTIONAL,
    modeSpecificPhysChInfo       CHOICE {
        fdd
            SEQUENCE {
                cpch-SetInfo          CPCH-SetInfo              OPTIONAL
            }
        },
        tdd
    }
    dl-InformationPerRL-List      DL-InformationPerRL-List  OPTIONAL,
-- Extension mechanism
    non-Release99-Information     SEQUENCE {}                OPTIONAL
}

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

URAUUpdateConfirm ::= 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
    non-Release99-Information     SEQUENCE {}                OPTIONAL
}

```

11.3.1 Core network information elements

IMPORTS

```

| CN-DRX-CycleLengthCoefficient
FROM UserEquipment-IEs

CN-DomainSysInfo ::= SEQUENCE {
    cn-DomainIdentity          CN-DomainIdentity,
    cn-Type                    CHOICE {
        gsm-MAP                NAS-SystemInformationGSM-MAP,
        ansi-41                 NAS-SystemInformationANSI-41
    },
    | cn-DRX-CycleLengthCoeff  CN-DRX-CycleLengthCoefficient
}

```

11.3.3 User equipment information elements

```

| CN-DRX-CycleLengthCoefficient ::= INTEGER (6..12)
| UTRAN-DRX-CycleLengthCoefficient ::= _____INTEGER (32..12)

```

11.3.7 Measurement information elements

IMPORTS

```

| UTRAN-DRX-CycleLengthCoefficient
FROM UserEquipment-IEs

FACH-MeasurementOccasionInfo ::= SEQUENCE {
    k-UTRA                    UTRAN-DRX-CycleLengthCoefficient,
    | otherRAT-InSysInfoList  OtherRAT-InSysInfoList
}

```


10.3.2.3 Cell selection and re-selection info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Mapping Info	MP		Mapping info 10.3.2.4	Contains mapping function for quality measurements
CHOICE <i>mode</i>	MP			
>FDD				
>>Cell_selection_and_reselection_quality_measure	MP		Enumerated (CPICH Ec/N0; CPICH SIR)	Choice of measurement (CPICH Ec/N0- or CPICH SIR) to use as quality measure Q. Note 1.
>>>S _{intrasearch}	OP		Integer (-32..20 by step of 2)	TS 25.304 [dB]
>>>S _{intersearch}	OP		Integer (-32..20 by step of 2)	TS 25.304 [dB]
>>>S _{searchHCS}	OP		Integer (-32..20 by step of 2)	TS 25.304 [dB]
>>>RAT List	OP	1 to <MaxRAT>		
>>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	At least 2 spare values Criticality: reject are needed
>>>>S _{search,RAT}	MP		Integer (-32..20 by step of 2)	TS 25.304 [dB]
>>>>S _{HCS,RAT}	OP		Integer (-32..20 by step of 2)	TS 25.304 [dB]
>TDD				
>>>S _{intrasearch}	OP		Integer (-120..90 by step of 5)	TS 25.304 [dBm]

>>S _{intersearch}	OP		Integer (-120..90 by step of 5)	TS 25.304 [dBm]
>>S _{searchHCS}	OP		Integer (-120..90 by step of 5)	TS 25.304 [dBm]
>>RAT List	OP	1 to <MaxRAT>		
>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	At least 2 spare values Criticality: reject are needed
>>>S _{search,RAT}	OP		Integer (-120..90 by step of 5)	TS 25.304 [dBm]
>>>S _{HCS,RAT}	OP		Integer (-120..90 by step of 5)	TS 25.304 [dBm]
Qhyst _s	MP		Real (0..40 by step of 2)	[dB]
Treselection _s	MP		Integer (0..31)	[s]
HCS Serving cell Information	OP		HCS Serving cell information 10.3.7.12	
Cell Selection and Reselection parameters	OP			Used in Alternative 2 in TS 25.304
>Decoding range	OP			Decoding is done only when the cell measurement exceeds the neighbour cell decoding range.
>Qoffset _s	OP			Offset for UEs decoding this cell for cell reselection measurement
>OffsetExp	CV – if Qoffset			Expiration timer for UEs decoding the Qoffset _s

NOTE 1: ~~The work in order to support the CPICH SIR measurement is in progress in RAN WG4 and may impact the use of that measurement in this document~~

Multi bound	Explanation
MaxRAT	Maximum number of Radio Access Technologies that have to be considered. Maximum number is 4

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 10.3.7.90	
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.43	
>>CPICH Ec/N0	OP		Enumerated(-20..0)	In dB
>>CPICH RSCP	OP		Enumerated(-115..-40)	In dBm
>>CPICH SIR	OP		Enumerated(-10..20)	In dB Note 1
>>Pathloss	OP		Enumerated(46..158)	In dB
>>CFN-SFN observed time difference	OP		CFN-SFN observed time difference 10.3.7.6	Note 2
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.41	
>>Primary CCPCH RSCP	OP			
>>DL CCTrCH SIR	OP	1 to <maxCCTrCHcount>		SIR measurements for each DL CCTrCH
>>>Timeslot	OP	1 to <maxTS perCCTrCH count>		All timeslots on which the CCTrCH is mapped on
>>>>ISCP	OP			
>>>>RSCP	OP			
>>DL Timeslot ISCP	OP	1 to <maxTS toMEASUREcount>		ISCP measurements for each timeslot indicated by the UTRAN
>>>ISCP	OP			

Multi Bound	Explanation
<i>MaxCCTrCHcount</i>	Maximum number of DL CCTrCH allocated to an UE
<i>MaxTSperCCTrCHcount</i>	Maximum number of TS on which a single DL CCTrCH is mapped on
<i>MaxTS toMEASUREcount</i>	Maximum number of TS on which the UE has to measure

~~NOTE 1: If CPICH SIR can be used has not been concluded in WG4~~

NOTE 2: Feasibility of performing these measurements with compressed mode is unclear.

10.3.7.5 Cell reporting quantities

Includes non frequency related cell reporting quantities

For all boolean types TRUE means inclusion in the report is requested

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SFN-SFN observed time difference	MP		Enumerated(No report, type 1, type 2)	
Cell Identity	MP		Boolean	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPICH Ec/N0	MP		Boolean	
>>CPICH RSCP	MP		Boolean	
>>CPICH SIR	MP		Boolean	Note 1
>>Pathloss	MP		Boolean	
>>CFN-SFN observed time difference	MP		Boolean	
>TDD				
>>DL CCTrCH SIR	MP		Boolean	
>>Timeslot ISCP	MP		Boolean	
>>Primary CCPCH RSCP	MP		Boolean	
>>Pathloss	MP		Boolean	

NOTE 1: If CPICH SIR can be used has not been concluded in WG4

10.3.7.38 Intra-frequency measurement quantity

The quantity the UE shall measure in case of intra-frequency measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Filter coefficient	MP		Filter coefficient 10.3.7.9	
CHOICE <i>mode</i>	MP			
>FDD				
>>Measurement quantity	MP		Enumerated(C PICH Ec/N0, CPICH RSCP, CPICH SIR , Pathloss, UTRA Carrier RSSI)	Pathloss=Primary CPICH Tx power-CPICH RSCP If used in Inter system measurement quantity only Ec/N0 an RSCP is allowed. If used in inter-frequency measurement quantity RSSI is not allowed. Note 1
>TDD				
>>Measurement quantity	MP		Enumerated(Primary CCPCH RSCP, Pathloss, Timeslot ISCP, UTRA Carrier RSSI)	Pathloss=Primary CCPCH Tx power-Primary CCPCH RSCP If used in inter-frequency measurement quantity RSSI is not allowed.

~~NOTE 1: If CPICH SIR can be used has not been concluded in WG4~~

10.3.7.42 Intra-frequency reporting quantity for RACH reporting

Contains the reporting quantity information for an intra-frequency measurement report, which is sent on the RACH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SFN-SFN observed time difference	MP		Enumerated(No report, type 1, type 2)	
CHOICE <i>mode</i>	MP			
>FDD				
>>Reporting quantity	MP		Enumerated(CPICH Ec/N0, CPICH RSCP, CPICH SIR , Pathloss, No report)	Note 1
>TDD				
>>Reporting quantity	MP		Enumerated(Timeslot ISCP, Primary CCPCH RSCP, No report)	

~~NOTE 1: If CPICH SIR can be used has not been concluded in WG4~~

10.3.7.69 Measured results

Contains the measured results of the quantity indicated optionally by Reporting Quantity in Measurement Control. "Measured results" can be used for both event trigger mode and periodical reporting mode. The list should be in the order of the value of the measurement quality (the first cell should be the best cell). The "best" cell has the largest value when the measurement quantity is "Ec/No" ~~or~~ "RSCP" ~~or~~ "SIR". On the other hand, the "best" cell has the smallest value when the measurement quantity is "Pathloss".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Measurement	MP			
>Intra-frequency measured results list			Intra-frequency measured results list 10.3.7.35	
>Inter-frequency measured results list			Inter-frequency measured results list 10.3.7.15	
>Inter-system measured results list			Inter-system measured results list 10.3.7.26	
>Traffic volume measured results list			Traffic volume measured results list 10.3.7.93	
>Quality measured results list			Quality measured results list 10.3.7.79	
>UE Internal measured results			UE Internal measured results 10.3.7.102	
>LCS measured results			LCS measured results 10.3.7.56	

10.3.7.70 Measured results on RACH

Contains the measured results on RACH of the quantity indicated optionally by Reporting Quantity in the system information broadcast on BCH. The list should be in the order of the value of the measurement quality (the first cell should be the best cell). The "best" cell has the largest value when the measurement quantity is "Ec/No" ~~or "RSCP"~~ ~~or "SIR"~~. On the other hand, the "best" cell has the smallest value when the measurement quantity is "Pathloss".

Information Element/group name	Need	Multi	Type and reference	Semantics description
Measurement result for current cell				
CHOICE mode	MP			
>FDD				
>>CHOICE measurement quantity	MP			
>>>CPICH Ec/N0			Integer(-20..0)	In dB
>>>CPICH RSCP			Integer(-115..-40)	In dBm
>>>CPICH SIR			Integer(-10..20)	In dB Note 1
>>>Pathloss			Integer(46..158)	In dB
>TDD				
>>Timeslot ISCP	OP			
>>Primary CCPCH RSCP	OP			
Measurement results for monitored cells	OP	1 to 7		
>SFN-SFN observed time difference	OP		SFN-SFN observed time difference 10.3.7.90	It is absent for current cell
>CHOICE mode	MP			
>>FDD				
>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.43	
>>>CHOICE measurement quantity	OP			It is absent for current cell
>>>>CPICH Ec/N0			Integer(-20..0)	In dB
>>>>CPICH RSCP			Integer(-115..-40)	In dBm
>>>>CPICH SIR			Integer(-10..20)	In dB Note 1
>>>>Pathloss			Integer(46..158)	In dB
>>TDD				
>>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.41	
>>>Primary CCPCH RSCP	OP			It is absent for current cell

~~NOTE 1: If CPICH SIR can be used has not been concluded in WG4~~

NOTE 2: Monitored cells consist of current cell and neighbouring cells.

10.3.7.74 Measurement reporting mode

Contains the type of Measurement Report transfer mode and the indication of periodical/event trigger.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement Report Transfer Mode	MP		Enumerated (Acknowledged mode RLC, Unacknowledged mode RLC)	
Periodical Reporting / Event Trigger Reporting Mode	MP		Enumerated (Periodical reporting, Event trigger)	

~~NOTE 1: The work in order to support the CPICH Rx SIR measurement is in progress in RAN WG4 and may impact the use of that measurement in this document~~

11.3.2 UTRAN mobility information elements

```

CellSelectQualityMeasure ::=          ENUMERATED {
                                        cpich-Ec-N0, cpich-SIR }

CellSelectReselectInfo ::=          SEQUENCE {
    mappingInfo                       MappingInfo,
    modeSpecificInfo                   CHOICE {
        fdd                            SEQUENCE {
            cellSelectQualityMeasure    CellSelectQualityMeasure,
            s-Intrasearch                S-SearchFDD                OPTIONAL,
            s-Intersearch                S-SearchFDD                OPTIONAL,
            s-SearchHCS                  S-SearchFDD                OPTIONAL,
            rat-List                     RAT-FDD-InfoList           OPTIONAL
        },
        tdd                            SEQUENCE {
            s-Intrasearch                S-SearchTDD                OPTIONAL,
            s-Intersearch                S-SearchTDD                OPTIONAL,
            s-SearchHCS                  S-SearchTDD                OPTIONAL,
            rat-List                     RAT-TDD-InfoList           OPTIONAL
        }
    },
    q-Hyst-S                           Q-Hyst-S,
    t-Reselection-S                    T-Reselection-S,
    hcs-ServingCellInformation          HCS-ServingCellInformation OPTIONAL,
    cellSelectReselectParams            CellSelectReselectParams   OPTIONAL
}
    
```

11.3.7 Measurement information elements

```

CellMeasuredResults ::=          SEQUENCE {
    cellIdentity                       CellIdentity                OPTIONAL,
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference   OPTIONAL,
    modeSpecificInfo                   CHOICE {
        fdd                            SEQUENCE {
            primaryCPICH-Info           PrimaryCPICH-Info,
            cpich-Ec-N0                  CPICH-Ec-N0                OPTIONAL,
            cpich-RSCP                    CPICH-RSCP                OPTIONAL,
            cpich-SIR                  CPICH-SIR                OPTIONAL,
            pathloss                      Pathloss                    OPTIONAL,
            cfn-SFN-ObsTimeDifference     CFN-SFN-ObsTimeDifference  OPTIONAL
        },
        tdd                            SEQUENCE {
            primaryCCPCH-Info           PrimaryCCPCH-Info,
            dl-CCTrCH-SIR-List           DL-CCTrCH-SIR-List         OPTIONAL,
            dl-TimeslotISCP-List         DL-TimeslotISCP-List      OPTIONAL
        }
    }
}

CellReportingQuantities ::=      SEQUENCE {
    sfn-SFN-OTD-Type                   SFN-SFN-OTD-Type,
    
```

```

cellIdentity          CellIdentity,
modeSpecificInfo     CHOICE {
  fdd                 SEQUENCE {
    cpich-Ec-N0       BOOLEAN,
    cpich-RSCP        BOOLEAN,
    cpich-SIR       BOOLEAN,
    pathloss          BOOLEAN,
    cfn-SFN-ObsTimeDifference  BOOLEAN
  },
  tdd                 SEQUENCE {
    dl-CCTrCH-SIR    BOOLEAN,
    timeslotISCP     BOOLEAN,
    primaryCCPCH-RSCP  BOOLEAN,
    pathloss         BOOLEAN
  }
}

IntraFreqMeasQuantity ::= SEQUENCE {
  filterCoefficient  FilterCoefficient,
  modeSpecificInfo   CHOICE {
    fdd              SEQUENCE {
      intraFreqMeasQuantity-FDD  IntraFreqMeasQuantity-FDD
    },
    tdd              SEQUENCE {
      intraFreqMeasQuantity-TDD  IntraFreqMeasQuantity-TDD
    }
  }
}

IntraFreqMeasQuantity-FDD ::= ENUMERATED {
  cpich-Ec-NO,
  cpich-RSCP,
  cpich-SIR,
  pathloss,
  ultra-CarrierRSSI }

IntraFreqReportingQuantityForRACH ::= SEQUENCE {
  sfn-SFN-ObsTimeDifference  SFN-SFN-ObsTimeDifference,
  modeSpecificInfo           CHOICE {
    fdd                      SEQUENCE {
      intraFreqRepQuantityRACH-FDD  IntraFreqRepQuantityRACH-FDD
    },
    tdd                      SEQUENCE {
      intraFreqRepQuantityRACH-TDD  IntraFreqRepQuantityRACH-TDD
    }
  }
}

IntraFreqRepQuantityRACH-FDD ::= ENUMERATED {
  cpich-EcNO, cpich-RSCP,
  cpich-SIR, pathloss, noReport }

MeasuredResultsOnRACH ::= SEQUENCE {
  currentCell           SEQUENCE {
    modeSpecificInfo    CHOICE {
      fdd              SEQUENCE {
        measurementQuantity  CHOICE {
          cpich-Ec-N0       CPICH-Ec-N0,
          cpich-RSCP        CPICH-RSCP,
          cpich-SIR       CPICH-SIR,
          pathloss          Pathloss
        }
      },
      tdd              SEQUENCE {
        timeslotISCP       TimeslotISCP,
        primaryCCPCH-RSCP  PrimaryCCPCH-RSCP
      }
    }
  },
  monitoredCells        MonitoredCellRACH-List  OPTIONAL
}

MonitoredCellRACH-List ::= SEQUENCE (SIZE(1..7)) OF
  MonitoredCellRACH-Result

MonitoredCellRACH-Result ::= SEQUENCE {
  sfn-SFN-ObsTimeDifference  SFN-SFN-ObsTimeDifference  OPTIONAL,

```

```
modeSpecificInfo
  fdd
    primaryCPICH-Info
    measurementQuantity
      cpich-Ec-NO
      cpich-RSCP
      cpich-SIR
      pathloss
    }
  },
  tdd
    primaryCCPCH-Info
    primaryCCPCH-RSCP
  }
}
```

CHOICE {
 SEQUENCE {
 PrimaryCPICH-Info,
 CHOICE {
 CPICH-Ec-NO,
 CPICH-RSCP,
 ~~CPICH-SIR,~~
 Pathloss
 } OPTIONAL
 }
 SEQUENCE {
 PrimaryCCPCH-Info,
 PrimaryCCPCH-RSCP
 } OPTIONAL
}

14.1.1 Intra-frequency measurement quantities

- 1 Downlink E_c/I_0 (chip energy per total received channel power density)
 - 2 Downlink path loss.
 - 3 Downlink received signal code power (RSCP) after despreading.
 - ~~4 Downlink signal to interference ratio (SIR) after despreading on a specific DL physical channel (RSCP/ISCP)~~
- ~~NOTE: If CPICH SIR can be used has not been concluded in TSG RAN WG4~~
- 5 Averaged signal-to-interference ratio (SIR) for all DL codes belonging to one TS and to one CCTrCH
 - 6 ISCP measured on Timeslot basis

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 chapter 7)]

- UE transmit power
- UE position (FFS)
- Downlink SIR (RSCP/ISCP) on the traffic channels after RAKE combining (FFS)

~~Downlink SIR (RSCP/ISCP) on primary CPICH(FDD)/CCPCH(TDD) (e.g. used for initial DL power setting on new radio links.)(FFS)~~

8.1.x Signalling connection release request procedure



Figure x: Signalling connection release request procedure, normal case

8.1.x.1 General

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

8.1.x.2 Initiation

The UE shall initiate the signalling connection release procedure, if it receives a request from the higher layers to release one or more signalling sessions.

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

The IE "Flow Identifier" indicates the signalling flow identities which are requested to be released in the UTRAN.

8.1.x.3 Reception of SIGNALLING CONNECTION RELEASE REQUEST by the UTRAN

Upon reception of a SIGNALLING CONNECTION RELEASE REQUEST message, the UTRAN 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 may initiate the signalling connection release procedure.

10.2.x SIGNALLING CONNECTION RELEASE REQUEST

This message is used by the UE to request for the release of one or more signalling connections to a CN domain.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

<u>Information Element</u>	<u>Need</u>	<u>Multi</u>	<u>IE type and reference</u>	<u>Semantics description</u>
<u>Message Type</u>	<u>MP</u>		<u>Message type</u>	
<u>CN information elements</u>				
<u>Signalling Flow related information</u>		<u>1 to <maxFlowI D></u>		<u>Flow identifier to be provided for each signalling flow to be released.</u>
<u>>Flow Identifier</u>	<u>MP</u>		<u>Flow Identifier 10.3.1.4</u>	<u>Allocated by UE for a particular session</u>

<u>Multi Bound</u>	<u>Explanation</u>
<u>MaxFlowI d</u>	<u>Maximum number of flow identifiers</u>

11.1 General message structure

```

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

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

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete      ActiveSetUpdateComplete,
    activeSetUpdateFailure      ActiveSetUpdateFailure,
    handoverToUTRANComplete     HandoverToUTRANComplete,
    initialDirectTransfer       InitialDirectTransfer,
    interSystemHandoverFailure  InterSystemHandoverFailure,
    measurementReport           MeasurementReport,
    physicalChannelReconfigurationComplete      PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure      PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete      RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure      RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete      RadioBearerReleaseComplete,
    radioBearerReleaseFailure      RadioBearerReleaseFailure,
    radioBearerSetupComplete      RadioBearerSetupComplete,
    radioBearerSetupFailure      RadioBearerSetupFailure,
    rntiReallocationComplete      RNTIReallocationComplete,
    rntiReallocationFailure      RNTIReallocationFailure,
    rrcConnectionReEstablishmentComplete      RRCConnectionReEstablishmentComplete,
    rrcConnectionReleaseComplete      RRCConnectionReleaseComplete,
    rrcConnectionSetupComplete      RRCConnectionSetupComplete,
    rrcStatus                        RRCStatus,
    securityModeComplete      SecurityModeComplete,
    securityModeFailure      SecurityModeFailure,
    signallingConnectionReleaseRequest      SignallingConnectionReleaseRequest,

```

```

transportChannelReconfigurationComplete
                                TransportChannelReconfigurationComplete,
transportChannelReconfigurationFailure
                                TransportChannelReconfigurationFailure,
transportFormatCombinationControlFailure
                                TransportFormatCombinationControlFailure,
ueCapabilityInformation          UECapabilityInformation,
uplinkDirectTransfer            UplinkDirectTransfer,
extension                        NULL
}

```

11.2 PDU definitions

```

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

SignallingConnectionReleaseRequest ::= SEQUENCE {
  -- Core network IEs
  signallingFlowInfoList      SignallingFlowInfoList
}

```

3GPP RAN WG2 Meeting #13
Oahu, HI, USA, 22 - 26 May 2000

Document **R2-000987**

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 318r1

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG-RAN#8**

list expected approval meeting # here ↑

for approval
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: <http://ftp.3gpp.org/Information/CR-Form-v2.doc>

Proposed change affects:

(at least one should be marked with an X)

(U)SIM ME UTRAN / Radio Core Network

Source:

TSG-RAN WG2

Date:

2000-04-06

Subject:

Change to IMEI coding from BCD to hexadecimal.

Work item:

Category:

(only one category shall be marked with an X)

F Correction
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
Release 00

Reason for change:

The current IMEI structure is proposed to be changed to allow use of hexadecimal coding in addition of current BCD. The change is proposed in 3GPP TSG-CN, TSG-S, TSG-T and TSG-R to allow 16.7 million mobile terminals to be produced with one Type Approval Code. The current restriction for one million units per TAC is already a problem in the GSM terminal manufacturing and can only be predicted to worsen in the future.

Change to use hexadecimal coding is most simple since it does not affect to existing message lengths in GSM air interface and network interfaces.

In case of RAN WG2, the change is only required to the Page Message Structure, where the coding is currently defined. The change does not affect to message length since BCD and hexadecimal digit coding consume equal amount of bits. In the TS25.331 radio interface the only issue is to not use any 'sanity' check for this information element and allow all binary values for all 15 digits of IMEI. The old IMEI's in GSM system are fully backwards compatible with the changed coding for the message interface. Depending on CN implementation it may be necessary to change the IMEI database control software.

Clauses affected:

10.3.1.5, 11.3.1

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:



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10.3.1.5 IMEI

This IE contains an International Mobile Equipment Identity. Setting specified in [TS 23.003]

Information Element/Group name	Need	Multi	Type and reference	Semantics description
IMEI		15		
>IMEI digit			INTEGER(0..15)	

11.3.1 Core network information elements

IMEI-Digit ::= INTEGER (0..15)

IMEI ::= SEQUENCE (SIZE (15)) OF IMEI-Digit

1 References

- [1] 3GPP TS 25.331 v3.2.0 , RRC Protocol Specification, Mar 2000

3GPP RAN WG2 Meeting #12
 Seoul, Korea 10th – 13th April 2000

Document **R2-000902**

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25.331

CR 319r1

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

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For submission to: **TSG-RAN #8**
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Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <http://ftp.3gpp.org/Information/CR-Form-v2.doc>

Proposed change affects:
 (at least one should be marked with an X)

(U)SIM ME UTRAN / Radio Core Network

Source: TSG-RAN WG2 **Date:** 2000-04-06

Subject: Removal of RLC sequence numbers from RRC initialisation information.

Work item:

Category:

F Correction
 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
 Release 00

(only one category shall be marked with an X)

Reason for change:

1. Ambiguities in reception of master information block on FACH channel.

8.1.1.3.2 is supposed to indicate that if there is a change on BCH, then the master information block is transmitted on FACH for terminals in Cell_FACH state to recognize the BCH contents change. If this is the case, it appears strange that the next sentence is saying that master information block on BCH indicates the available system information blocks on FACH --- this seems to imply that all system information blocks are sent on FACH ? Editorial changes proposed to table 8.1.1 and Clause 8.1.1.3.2

2. Removal of RLC SN numbers and Variable RLC parameters from RRC Initialisation Information.

It appears that these parameters are not actually required Reasoning for this is that as PDCP got it's own sequence numbering (these are included to the PDCP SN Info), the RLC SN numbering is not required any mode. They are also not required for encryption either, since RLC is reset at the time of relocation and SN incrementing is restarted from zero again – along with incrementing of HFN. In addition to this the reset of RLC in case of RNC relocation, 'Variable RLC parameters' as RLC state information, are not required at the target RNC. Changes proposed to clause 14.10.1.

Clauses affected: Clauses 8.1.1.3.2 and 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:**



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8.1.1.3.2 Reception of SYSTEM INFORMATION messages broadcast on a FACH transport channel

The master information block is not broadcast regularly on FACH. The master information block on FACHBCH indicates the changes of system information block contents available system information blocks on BCHFACH.

When receiving system information blocks on FACH, the UE shall perform the action as defined in sub clause 8.1.1.5.

1.1.1 14.10.1 RRC Initialisation Information, source RNC to target RNC

When relocation of SRNS is decided to be executed, the RRC shall build the state information, which contains the RRC, RLC and MAC related RRC message information elements, which currently specify the state of the RRC including the radio bearer and transport channel configuration. This "RRC initialisation information, source RNC to target RNC" shall be sent by the source RNC to the target RNC to enable transparent relocation of the RRC and lower layer protocols. Correspondingly, the RRC in the target RNC shall receive the "RRC initialisation information, source RNC to target RNC" and update its state parameters accordingly to facilitate a transparent relocation of SRNS for the UE.

Information Element	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
State of RRC	M		Enumerated (CELL_DCH, CELL_FACH, CELL_PCH, URA_PCH)	
State of RRC procedure	M		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, others)	
Variable RLC parameters	M		?????	
Ciphering related information				
Ciphering status	M		Enumerated(Not started, Started)	
Ciphering info per radio bearer		0 to < numberOfRadioBearers>		
>RB identity	M		RB identity	
>Downlink HFN	M		Ciphering hyperframe number	
>Uplink HFN	M		Ciphering hyperframe number	
>Downlink RLC sequence Number	O		Integer(0..4095)	RLC SN [TS 25.322]
>Uplink RLC sequence number	O		Integer(0..4095)	RLC SN [TS 25.322]
Integrity protection related information				
Integrity protection status	M		Enumerated(Not started, Started)	
Integrity protection failure count	M		Integer(0..N316)	
Signalling radio bearer specific integrity protection information		3 to <maxSRBcount>		Status information for RB#0-3 in that order
> Uplink HFN	M		Integrity protection hyper frame number	
> Downlink HFN	M		Integrity protection hyper frame number	
> Uplink RRC Message sequence number	M		Integer (0..15)	
> Downlink RRC Message sequence number	M		Integer (0..15)	
Implementation specific parameters	O		Bitstring (1..512)	
RRC IEs				
UE Information elements				
U-RNTI	M			
C-RNTI	O			
UE radio access Capability	M			
Other Information elements				
Inter System message (inter system classmark)	O			
UTRAN Mobility Information elements				
URA Identifier	O			

Information Element	Need	Multi	Type and reference	Semantics description
CN Information Elements				
CN common GSM-MAP NAS system information	M		GSM-MAP NAS system information	
CN domain related information		0 to <MaxNo CNdomains>		CN related information to be provided for each CN domain
>CN domain identity	O			
>CN domain specific GSM-MAP NAS system info	O		GSM-MAP NAS system information	
Measurement Related Information elements				
For each ongoing measurement reporting		0 to <maxNo OfMeas>		
Measurement Identity Number	M			
Measurement Command	M			
Measurement Type	C Setup			
Measurement Reporting Mode	O			
Additional Measurement Identity number				
CHOICE Measurement				
Intra-frequency				
Intra-frequency cell info		0 to <MaxIntraCells>		
Intra-frequency measurement quantity	O			
Intra-frequency reporting quantity	O			
Reporting cell status	O			
Measurement validity	O			
CHOICE report criteria	O			
Intra-frequency measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Inter-frequency				
Inter-frequency cell info		0 to <MaxInterCells>		
Inter-frequency measurement quantity	O			
Inter-frequency reporting quantity	O			
Reporting cell status	O			
Measurement validity	O			
CHOICE report criteria	O			
Inter-frequency measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Inter-system				
Inter-system cell info		0 to <MaxInterSysCells>		
Inter-system measurement quantity	O			
Inter-system reporting quantity	O			
Reporting cell status	O			
Measurement validity				
CHOICE report criteria				
Inter-system measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Traffic Volume				

Information Element	Need	Multi	Type and reference	Semantics description
Traffic volume measurement Object	O			
Traffic volume measurement quantity	O			
Traffic volume reporting quantity	O			
CHOICE report criteria	O			
Traffic volume measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Quality				
Quality measurement Object	O			
Quality measurement quantity	O			
Quality reporting quantity	O			
CHOICE report criteria	O			
Quality measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
UE internal				
UE internal measurement quantity	O			
UE internal reporting quantity	O			
CHOICE report criteria	O			
UE internal measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Radio Bearer Information Elements				
Signalling radio bearer information		1 to <maxSR Bcount>		For each signalling radio bearer
>RB identity	M			
>RLC info	M			
>RB mapping info	M			
RAB information		0 to <maxRA Bcount>		Information for each RAB
>RAB info	M			
>For each Radio Bearer		0 to <maxRB count>		Information for each radio bearer belonging to this RAB
>>RB Identity	M			
>>RLC Info	M			
>>PDCP Info	O			Absent ifPDCP is not configured for RB
>>PDCP SN Info	C PDCP			
>>RB mapping info	M			
Transport Channel Information Elements				
TFCS (UL DCHs)	O			
TFCS (DL DCHs)	O			
TFC subset (UL DCHs)	O			
TFCS (USCHs)	O			
TFCS (DSCHs)	O			
TFC subset (USCHs)	O			
Uplink transport channels				
For each uplink transport channel		0 to <MaxTrC H>		
>Transport channel identity	M			
>TFS	M			
Downlink transport channels				

Information Element	Need	Multi	Type and reference	Semantics description
For each downlink transport channel		0 to <MaxTrC H>		
>Transport channel identity	M			
>TFS	M			
Measurement report	O			MEASUREMENT REPORT 10.1.15

Condition	Explanation
<i>PDCP</i>	The IE is only present when PDCP Info IE is present

2 References

- [1] 3GPP TS 25.331 v3.2.0 , RRC Protocol Specification, Mar 2000

3GPP Meeting RAN WG2 #13
Oahu, Hawaii, 22.-26. May, 2000

Document **R2-000989**

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25.331 CR 320r3 Current Version: **3.2.0**

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

For submission to: **TSG-RAN #8** for approval 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 UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 17. Apr, 2000

Subject: Addition of the length of PDCP sequence number into PDCP info

Work item:

Category: F Correction **Release:** Phase 2
(only one category shall be marked with an X) 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
Release 00

Reason for change: Option to select the maximum number of PDCP PDUs that are in transmission buffers. The limitation is needed for supporting lossless inter-system handover (GSM->UMTS).

The PDCP SN is only valid if lossless SRNS relocation is to be supported.

Clauses affected: 10.3.4.2, 11.3.4

Other specs affected:

Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
MS test specifications	<input type="checkbox"/>	→ List of CRs:	
BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
O&M specifications	<input type="checkbox"/>	→ List of CRs:	

Other comments:



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10.3.4.2 PDCP info

The purpose of the PDCP info IE is to indicate which algorithms shall be established and to configure the parameters of each of the algorithms.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Support for lossless SRNS relocation	CV- <i>LosslessCriteria</i>		Boolean	TRUE means support
Max PDCP SN	CV Lossless		Integer (255, 65535)	Maximum PDCP sequence number. Default value is 65535.
PDCP PDU header	MD		Enumerated (present, absent)	Whether a PDCP PDU header is existent or not. Default value is "present"
Header compression information	OP	1 to <Algorithm Count>		
>CHOICE <i>algorithm type</i>	MP			7 spare values needed, criticality: reject
>>RFC2507				Header compression according to IETF standard RFC2507
>>>F_MAX_PERIOD	MD		Integer (1..65535)	Largest number of compressed non-TCP headers that may be sent without sending a full header. Default value is 256.
>>>F_MAX_TIME	MD		Integer (1..255)	Compressed headers may not be sent more than F_MAX_TIME seconds after sending last full header. Default value is 5.
>>>MAX_HEADER	OP		Integer (60..65535)	The largest header size in octets that may be compressed. Default value is 168.
>>>TCP_SPACE	MD		Integer (3..255)	Maximum CID value for TCP connections. Default value is 15.
>>>NON_TCP_SPACE	MD		Integer (3..65535)	Maximum CID value for non-TCP connections. Default value is 15.
>>>EXPECT_REORDERING	MD		Enumerated (reordering not expected, reordering expected)	Whether the algorithm shall reorder PDCP SDUs or not. Default value is "reordering expected".

Condition	Explanation
<i>LosslessCriteria</i>	This IE is present only if the IE "RLC mode" is "Acknowledged" and the IE "In-sequence delivery" is "True".
Lossless	This IE shall be present if the IE "Support for lossless SRNS relocation" is TRUE, otherwise it shall be absent.

Multi Bound	Explanation
<i>AlgorithmCount</i>	The number of algorithm types configured for PDCP entity.

11.3.4 Radio bearer information elements

```

LosslessSRNS-RelocSupport ::= CHOICE {
    supported MaxPDCP-SN,
    notSupported NULL
}

MaxPDCP-SN ::= ENUMERATED {
    sn255, sn65535 }

PDCP-Info ::= SEQUENCE {
    losslessSRNS-RelocSupport LosslessSRNS-RelocSupport BOOLEAN,
    pdcp-PDU-Header PDCP-PDU-Header OPTIONAL,
    headerCompressionInfoList HeaderCompressionInfoList OPTIONAL
}

```