TSG-RAN Meeting #11 ***RP-010029***
Palm Springs, CA, USA, 13 - 16 March 2001

Title: **Agreed CRs (Release '99) to TS 25.331 (1)**

Source: **TSG-RAN WG2**

Agenda item: **5.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-010599	agreed	25.331	642	2	R99	RL Failure in cell update procedure	F	3.5.0	3.6.0
R2-010543	agreed	25.331	645	1	R99	Clarification on COUNTER CHECK	F	3.5.0	3.6.0
R2-010704	agreed	25.331	646	2	R99	Traffic Volume Measurement corrections	F	3.5.0	3.6.0
R2-010596	agreed	25.331	650	2	R99	Reserved TFCI for the TDD Special Burst	F	3.5.0	3.6.0
R2-010363	agreed	25.331	653		R99	Correction to description of RRC state transitions	F	3.5.0	3.6.0
R2-010378	agreed	25.331	657		R99	RLC re-establish correction	F	3.5.0	3.6.0
R2-010546	agreed	25.331	658	1	R99	Removal of RLC logical channel mapping indicator	F	3.5.0	3.6.0
R2-010380	agreed	25.331	659		R99	New paging and establishment cause "Unknown"	F	3.5.0	3.6.0
R2-010549	agreed	25.331	660	1	R99	Miscellaneous procedure corrections	F	3.5.0	3.6.0
R2-010382	agreed	25.331	661		R99	Corrections to compressed mode pattern sequence handling	F	3.5.0	3.6.0
R2-010383	agreed	25.331	662		R99	Inter-system change clarifications	F	3.5.0	3.6.0
R2-010675	agreed	25.331	663	1	R99	RLC status transmission in CELL_PCH and URA_PCH	F	3.5.0	3.6.0
R2-010551	agreed	25.331	665	1	R99	Clarification of RB information parameter values for SRB0	F	3.5.0	3.6.0
R2-010387	agreed	25.331	666		R99	Encoding for RRC- container	F	3.5.0	3.6.0
R2-010595	agreed	25.331	667	2	R99	Update of message extension and encoding descriptions	F	3.5.0	3.6.0
R2-010673	agreed	25.331	669	2	R99	Security corrections	F	3.5.0	3.6.0
R2-010398	agreed	25.331	670		R99	Clarifications on Blind Handover Support	F	3.5.0	3.6.0
R2-010663	agreed	25.331	671	1	R99	Missing descriptions of UE actions	F	3.5.0	3.6.0
R2-010716	agreed	25.331	672	2	R99	Corrections on UE Positioning information	F	3.5.0	3.6.0
R2-010573	agreed	25.331	674	1	R99	Security related corrections to SRNS	F	3.5.0	3.6.0

3GPP TSG-RAN WG2 Meeting #19 ***R2-010599***
Sophia Antipolis, FRANCE, 19 - 24 Feb. 2001

CR-Form-v3

CHANGE REQUEST

⌘	**25.331 CR 642**	⌘ rev **r2** ⌘	Current version: **3.5.0** ⌘

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

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

Title: ⌘	RL Failure in cell update procedure		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘		***Date:*** ⌘	21 Feb. 2001
Category: ⌘	**F**	***Release:*** ⌘	R99
	Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	The actions on T302 expiry or DPCH failure in the cell update procedure don't include the actions that were to be performed in this case in the RRC connection re-establishment when it was in TS 25.331. Since these procedures were merged, some actions concerning the state of timers T314 and T315 are to be added. Additions to rev. 1 (highlighted in green): - setting of "T314 expired" and "T315 expired" in the variable RB_TIMER_INDICATOR in 8.3.1.12. - T302 is stopped if it was running (it is not running in case of a DPCH failure) - the checking of in service area is performed only if the UE has not entered idle mode due to the expiry of its timers.
Summary of change: ⌘	Addition of text on what to do in case of RL failure depending on T314 and T315
Consequences if not approved: ⌘	The UE would not behave as previously designed in case of a RL failure.

Clauses affected: ⌘	8.3.1.12	
Other specs Affected: ⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications	
Other comments: ⌘		

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

8.3.1.12 T302 expiry, URA reselection, cell reselection or DPCH failure

If any or several of the following conditions are true:

- expiry of timer T302;
- reselection to another UTRA cell (including the previously serving cell) when waiting for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message;
- the UE failed to establish the dedicated channel according to the CELL UPDATE CONFIRM message:

the UE shall:

- stop T302 if it is running

- If the UE was in CELL_DCH state prior to the initiation of the procedure and:

  - If timers T314 and T315 ~~are not running~~ have elapsed while T302 was running
    - 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 ~~is not running~~ has elapsed ~~during the last T302 cycle~~ while T302 was running, "T314 expired" in the variable RB_TIMER_INDICATOR is set to FALSE and T315 is still running,
    - Release locally all radio bearers (except Signalling Radio Bearers) which are associated with T314. An indication may be sent to the non-access stratum.
    - Set "T314 expired" to TRUE
  - If timer T315 ~~is not running~~ has elapsed ~~during the last T302 cycle~~ while T302 was running, "T315 expired" in the variable RB_TIMER_INDICATOR is set to FALSE and T314 is still running,
    - Release locally all radio bearers (except Signalling Radio Bearers) which are associated with T315. An indication may be sent to the non-access stratum.
    - Set "T314 expired" to TRUE

- check whether it is still in "in service area" (see subclause 8.5.5.2).

If the UE detects "in service area"~~,~~ if it has not entered idle mode and:

- if V302 is equal to or smaller than N302, the UE shall
  - if the UE performed cell re-selection:
    - delete its C-RNTI;
  - set the contents of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - enter idle mode;

- 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;
- and the procedure ends.

If the UE does not detect "in service area", it shall:

- continue searching for "in service area".

3GPP TSG-RAN2 Meeting #19 *Tdoc R2-010543*
Sophia Antipolis, France, 19-23 February 2001

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**645**	⌘ rev	**r1**	⌘	Curent version:	**3.5.0** ⌘

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

Title:	⌘	Clarification on COUNTER CHECK
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	
Date:	⌘	13 February 2001
Category:	⌘	**F**
Release:	⌘	R99

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

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

Reason for change:	⌘	1- The conditions in case of which the UE shell include certain RBs in the COUNTER CHECK RESPONSE message are not well defined and do not cover additional RB mismatch possibilities. 2- If an RB is included in the Counter Check message sent by UTRAN, but this RB is not stored in the ESTABLISHED_RABS variable of the UE, the COUNT-C Information value to be included in the response message is not well defined. 3- The action to be taken by the UTRAN in case an RB is included in the COUNTER CHECK message but is not stored in the ESTABLISHED_RABS variable of the UE and vice versa is not well defined 4- The description of Counter check procedure is misleading.
Summary of change:	⌘	1- The conditions explain each mismatch case, for RBs and for COUNT-C-MSB Information, separately. 2- A well-defined "COUNT-C Information value", which will not cause the release of RRC connection is defined. 3- An accidental RRC connection release is prevented. 4- Rewording of procedure description, the redundant description has been removed from the tabular part.
Consequences if not approved:	⌘	1,2,3-An unnecessary/unintended release of RRC connection may occur as a result of Counter Check procedure. 4- The description of Counter check procedure remains misleading.

Clauses affected:	⌘	8.1.15.3, 8.1.15.4, 10.2.10
Other specs affected:	⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications

Other comments: ⌘

8.1.15 Counter check

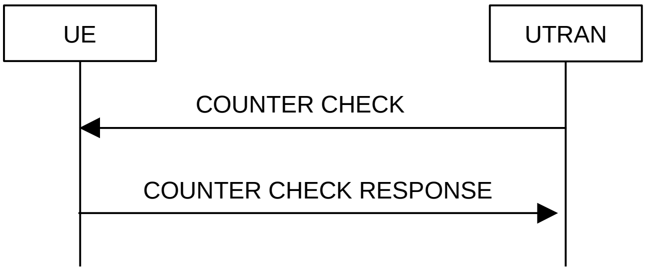

Figure 21: Counter check procedure

8.1.15.1 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 and downlink) during the RRC connection is identical at the UTRAN and at the UE (to prevent a possible intruder – a 'man-in-the-middle' – from operating). 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. In Release 99, this procedure is not applied for radio bearers using transparent mode RLC.

8.1.15.2 Initiation

The UTRAN monitors the COUNT-C value associated with 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.

8.1.15.3 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 IE "RB COUNT-C MSB information" in the COUNTER CHECK message to the COUNT-C MSB values of the corresponding radio bearers.
The UE shall

- set the IE "RRC transaction identifier" in the COUNTER CHECK RESPONSE message to the value of "RRC transaction identifier" in the entry for the COUNTER CHECK message in the table "Accepted transactions" in the variable TRANSACTIONS; and

- clear that entry.

If

- ~~the number of~~there is one or more radio bearers using UM or AM RLC mode stored in the variable ESTABLISHED_RABS~~, are different from the number of radio bearers~~which are not included in the IE "RB COUNT-C MSB information"; or

- there is one or more radio bearers included in the IE “RB COUNT-C MSB information”, which are not stored in the variable ESTABLISHED_RABS; or

- for any radio bearer (excluding SRBs) using UM or AM RLC mode stored in the variable ESTABLISHED_RABS and included in the IE “RB COUNT-C MSB information” with ~~of the~~ COUNT-C MSB values ~~are~~ different from the ~~mismatched~~ MSB part of the COUNT-C values in the UE,

the UE shall:

- -include these radio bearers in the IE "RB COUNT-C information" in the COUNTER CHECK RESPONSE message. For any RB which is included in the IE "RB COUNT-C MSB information" in the COUNTER CHECK message but not stored in the variable ESTABLISHED_RABS in the UE, the MSB part of COUNT-C values in the COUNTER CHECK RESPONSE message shall be set identical to COUNT-C-MSB values in the COUNTER CHECK message. The LSB part shall be filled by 0’s.;

The UE shall submit a COUNTER CHECK RESPONSE message to lower layers for transmission on the uplink DCCH using AM RLC. When the COUNTER CHECK RESPONSE message has been submitted to lower layers for transmission the procedure ends.

8.1.15.4 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~~ the UTRAN may release the RRC connection.
~~should compare the COUNT-C values in the message to the COUNT-C values which were used in forming the COUNTER CHECK message.~~

~~For RBs, which are in the COUTER CHECK RESPONSE message and which have not been included in the COUTER CHECK message, the UTRAN will conclude that these RBs exist in the UE but are not known by the UTRAN and it may not this case.~~

~~For RBs, which the MSB part of the COUNT-C values in the COUTER CHECK RESPONSE message equal exactly the COUNT-C-MSB values in the COUTER CHECK message, the UTRAN will conclude that these RBs exist in the UTRAN but are not known by the UE and it may note this case.~~

~~For the rest of RBs in the COUTER CHECK RESPONSE~~

~~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.~~

8.1.15.5 Cell re-selection

If the UE performs cell re-selection anytime during this procedure it shall, without interrupting the procedure, initiate the cell update procedure according to subclause 8.3.1.

8.1.15.6 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 9, the UE shall perform procedure specific error handling as follows:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- include the IE "Identification of received message"; and
- set the IE "Received message type" to COUNTER CHECK; and
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UE COUNTER CHECK message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the RRC STATUS message has been submitted to lower layers for transmission, the UE shall resume normal operation as if the invalid COUNTER CHECK message has not been received.

in the STATUS PDU.

10.2.10 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/Group name	Presence	Multi	IE type and reference	Semantics description
Message Type	MP			
UE information elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
RB information elements				
RB COUNT-C information	OP	1 to < maxRBallRABs >		~~For each RB (excluding SRBs) using UM or AM RLC whose COUNT-C MSB values did not match with the values received from the UTRAN.~~
>RB COUNT-C information	MP		RB COUNT-C information 10.3.4.15	

3GPP TSG-RAN WG2 Meeting #19
Sophia Antipolis, France, 19 - 23 Feb. 2001

R2-010704

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**646**	⌘ rev	**r2**	⌘	Current version:	**3.5.0** ⌘

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

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

Title:	⌘	Traffic Volume Measurement corrections
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	
Date:	⌘	23 Feb. 2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

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- *R97 (Release 1997)*
- *R98 (Release 1998)*
- *R99 (Release 1999)*
- *REL-4 (Release 4)*
- *REL-5 (Release 5)*

Reason for change: ⌘

1. Current Traffic Volume Measurement procedure is mixed up and it should be made clearly.
2. Make the RRC specification consistent with MAC specification.
3. The term 'RLC buffer payload' is used for both transport channel and radio bearer, and it gives misunderstandings.

Summary of change: ⌘

1. The overall Traffic Volume Measurement procedure is corrected and it is aligned with MAC specs.
2. The term 'RLC Buffer Payload' is used for radio bearer only. A new term 'Transport Channel Traffic Volume' is defined and used for triggering purposes per transport channel.
3. Section 8 is corrected to reflect the error cases where the UE is requested to report an average or variance of RLC buffer payload but no averaging time is specified.
4. Section 14.4 is modified according to the above changes.

This CR is a merge of the changes on traffic volume measurement in the contributions R2-010330 (LGIC) and R2-010453 (Motorola) to reflect discussions in the L2 adhoc. Effort has been made to make the necessary clarifications with minimum changes to existing IEs.

Changes in r2: The changes in section 8.6.7.10 and 8.6.7.11 are removed since they are captured in CR 702.

Consequences if not approved: ⌘ The Traffic Volume Measurement procedure will not work properly.

Clauses affected:	⌘	10.3.7.67, 10.3.7.72, 10.3.7.74, 14.4.1, 14.4.2, 14.4.2.1, 14.4.2.2, 14.4.3.1		
Other specs	⌘	[X] Other core specifications	⌘	25.321 25.922

Affected:		Test specifications O&M Specifications	
Other comments:	⌘		

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10.3.7.67 Traffic volume measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement results	OP	1 to <maxRB>		
>RB Identity	MP		RB Identity 10.3.4.16	
>RLC ~~b~~Buffer~~s~~ ~~p~~Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K)	In bytes And N Kbytes = N*1024 bytes
>Average of RLC ~~b~~Buffer ~~p~~Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K)	In bytes And N Kbytes = N*1024 bytes
>Variance of RLC ~~b~~Buffer ~~p~~Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K)	In bytes And N Kbytes = N*1024 bytes

10.3.7.72 Traffic volume measurement reporting criteria

Contains the measurement reporting criteria information for a traffic volume measurement.

Event 4a: ~~RLC buffer payload~~Transport Channel Traffic Volume [15] exceeds an absolute threshold.

Event 4b: ~~RLC buffer payload~~Transport Channel Traffic Volume [15] becomes smaller than an absolute threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH>		
>UL Transport Channel ID	OP		Transport channel identity 10.3.5.18	
>Parameters required for each Event	OP	1 to <maxMeasperEvent>		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	
>>Reporting Threshold	MP		Enumerated(8,16,32,64,128,256,512,1024,2K,3K,4K,6K,8K,12K,16K,24K,32K,48K,64K,96K,128K,192K,256K,384K,512K,768K)	Threshold in bytes And N Kbytes = N*1024 bytes
>>Time to trigger	OP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>>Pending time after trigger	OP		Integer(250, 500, 1000, 2000, 4000, 8000, 16000)	Time in seconds. Indicates the period of time during which it is forbidden to send any new measurement reports with the same Traffic volume event identity even if the triggering condition is fulfilled again. Time in milliseconds
>>Tx interruption after trigger	OP		Integer (250, 500, 1000, 2000, 4000, 8000, 16000)	Time in milliseconds. Indicates whether or not the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.

10.3.7.74 Traffic volume reporting quantity

Contains the reporting quantity information for a traffic volume measurement.

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RLC ~~b~~Buffer ~~p~~Payload for each RB	MP		Boolean	
Average of RLC ~~b~~Buffer ~~p~~Payload for each RB	MP		Boolean	
Variance of RLC ~~b~~Buffer ~~p~~Payload for each RB	MP		Boolean	

14.4 Traffic Volume Measurements

14.4.1 Traffic Volume Measurement Quantity

For traffic volume measurements in the UE only one quantity is ~~measured~~compared with the thresholds. This quantity is ~~RLC buffer payload~~Transport Channel Traffic Volume [15](which equals to the sum of Buffer Occupancies of RBs multiplexed onto a transport channel) in number of bytes. In order to support a large variation of bit rates and RLC buffer size capabilities, a non-linear scale ~~should be~~is used. Since, for each RB, the expected traffic includes both new and retransmitted RLC payload units and potentially existing Control PDUs, all these should be included in the ~~payload~~Buffer Occupancy measure. It should also be noted that traffic volume measurements are only applicable for acknowledged and unacknowledged mode.

According to what is stated in the Measurement Control message, the UE should support measuring of ~~buffer payload~~RLC Buffer Payload, Average of RLC Buffer Payload, and Variance of RLC Buffer Payload for a specific RB, RBs multiplexed onto the same Transport channel and the total UE ~~buffer payload~~traffic volume (the same as one transport channel for a UE that uses RACH).

14.4.2 Traffic Volume reporting triggers~~events~~

Traffic volume can be reported in two different ways, periodical and event triggered.

For periodical reporting the UE simply measures the Reporting Quantities in ~~the~~ number of bytes for each RB and reports the measurement result at the given time instants. ~~the transport channel~~ The Reporting Quantities (i.e. ~~the RLC buffers~~RLC Buffer Payload, Average of RLC Buffer Payload, and Variance of RLC Buffer Payload of each RB) are stated in the measurement control message. If Average of RLC Buffer Payload or Variance of RLC Buffer Payload is included as Reporting Quantity, the time interval to take an average or a variance shall be used. ~~of the RBs multiplexed onto that transport channel) stated in the measurement control message and reports the traffic volume at the given time instants.~~

Event triggered reporting is performed when Transport Channel Traffic Volume exceeds an upper threshold or becomes smaller than a lower threshold.~~ is exceeded~~. Every TTI, UE measures Transport Channel Traffic Volume for each transport channel and compares it with thresholds. If the value is out of range, UE measures the Reporting Quantities of the RBs mapped onto that transport channel and reports the measurement result. The Reporting Quantities are stated in the measurement control message.

~~The reporting quantities that should be included in the report are stated in the measurement control message. This could for example be which RBs or RLC buffers to include when sending the payload to the network.~~

14.4.2.1 Reporting event 4 A: ~~RLC buffer payload~~Transport Channel Traffic Volume exceeds an absolute threshold

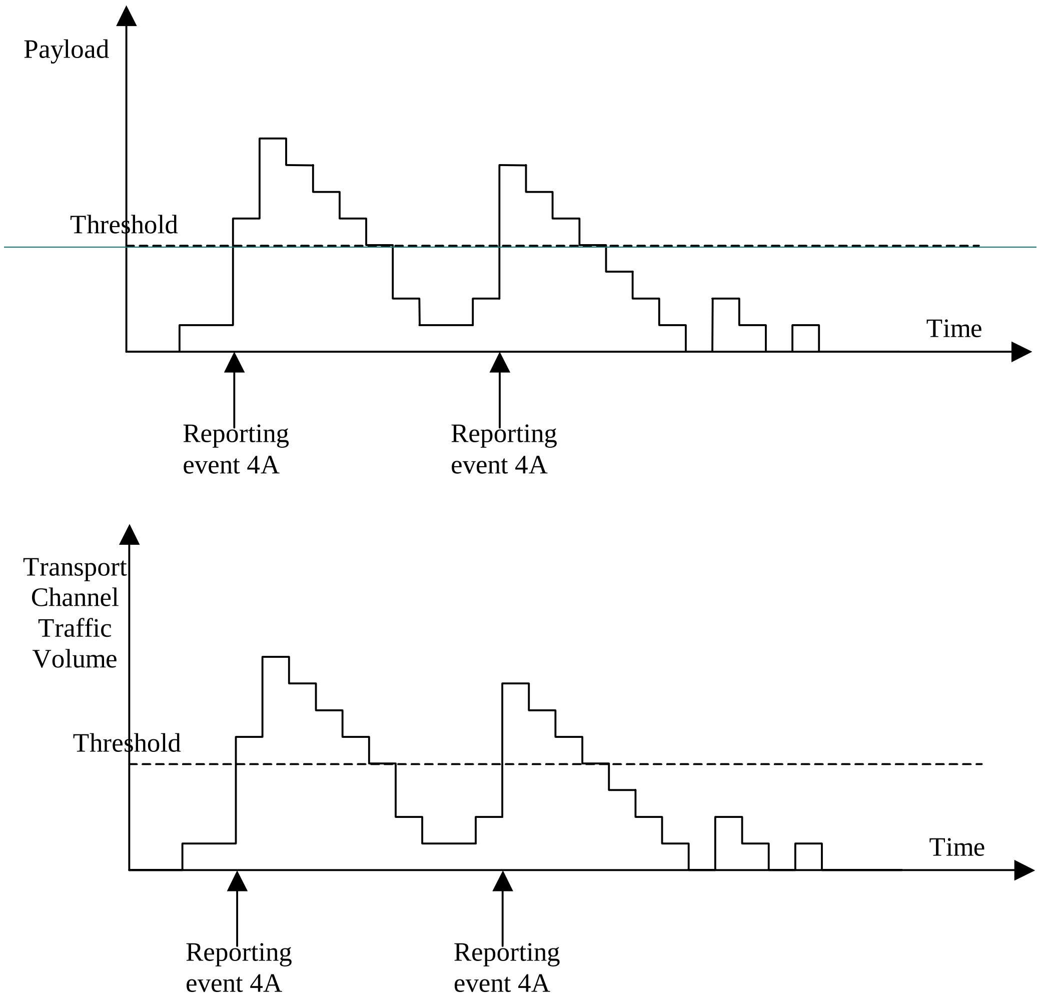
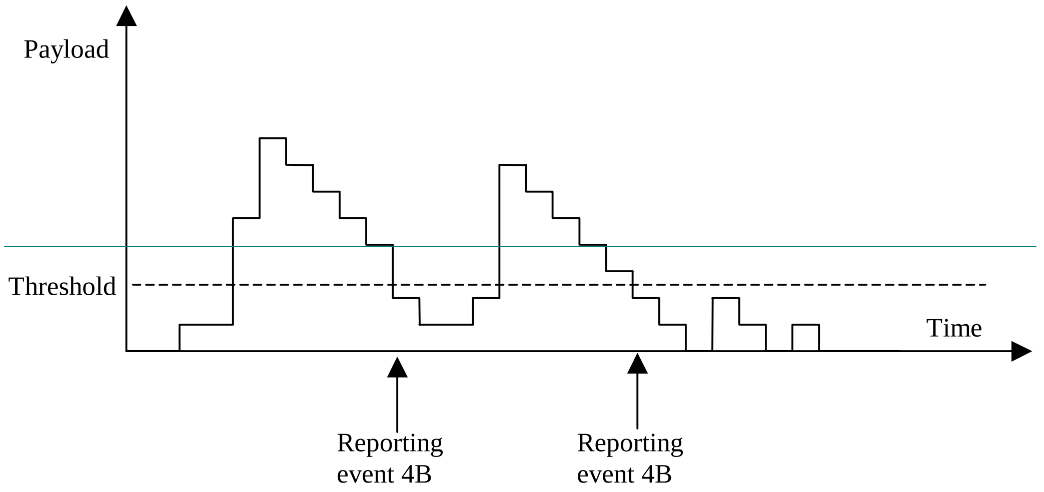


Figure 78: Event triggered report when ~~RLC buffer payload~~Transport Channel Traffic Volume exceeds a certain threshold

If the monitored ~~payload~~Transport Channel Traffic Volume [15] exceeds an absolute threshold, this is an event that could trigger a report. The corresponding report contains at least which transport channel triggered the report.

14.4.2.2 Reporting event 4 B: ~~RLC buffer payload~~Transport Channel Traffic Volume becomes smaller than an absolute threshold



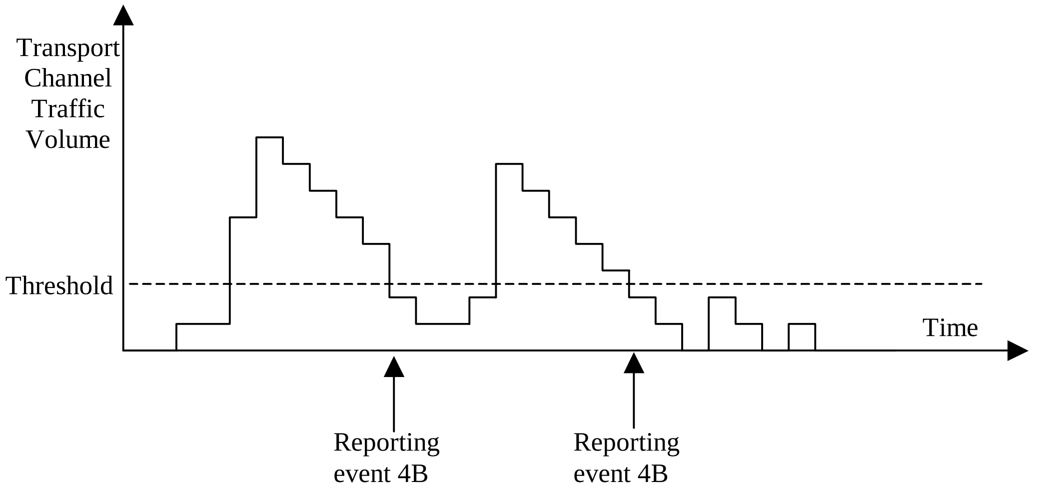


Figure 79: Event triggered report when ~~RLC buffer payload~~Transport Channel Traffic Volume becomes smaller than certain threshold

If the monitored ~~payload~~Transport Channel Traffic Volume [15] becomes smaller than an absolute threshold, this is an event that could trigger a report. The corresponding report contains at least which transport channel triggered the report.

14.4.3 Traffic volume reporting mechanisms

Traffic volume measurement triggering could be associated with both a *time-to-trigger* and a *pending time after trigger*. The time-to-trigger is used to get time domain hysteresis, i.e. the condition must be fulfilled during the time-to-trigger time before a report is sent. Pending time after trigger is used to limit consecutive reports when one traffic volume measurement report already has been sent. This is described in detail below.

14.4.3.1 Pending time after trigger

This timer is started in the UE when a measurement report has been triggered. The UE is then forbidden to send any new measurement reports with the same measurement ID during this time period even when the triggering condition is fulfilled again. Instead the UE waits until the timer has suspended. If the ~~payload~~Transport Channel Traffic Volume [15] is still above the threshold when the timer has expired the UE sends a new measurement report, and the timer is restarted. Otherwise it waits for a new triggering.

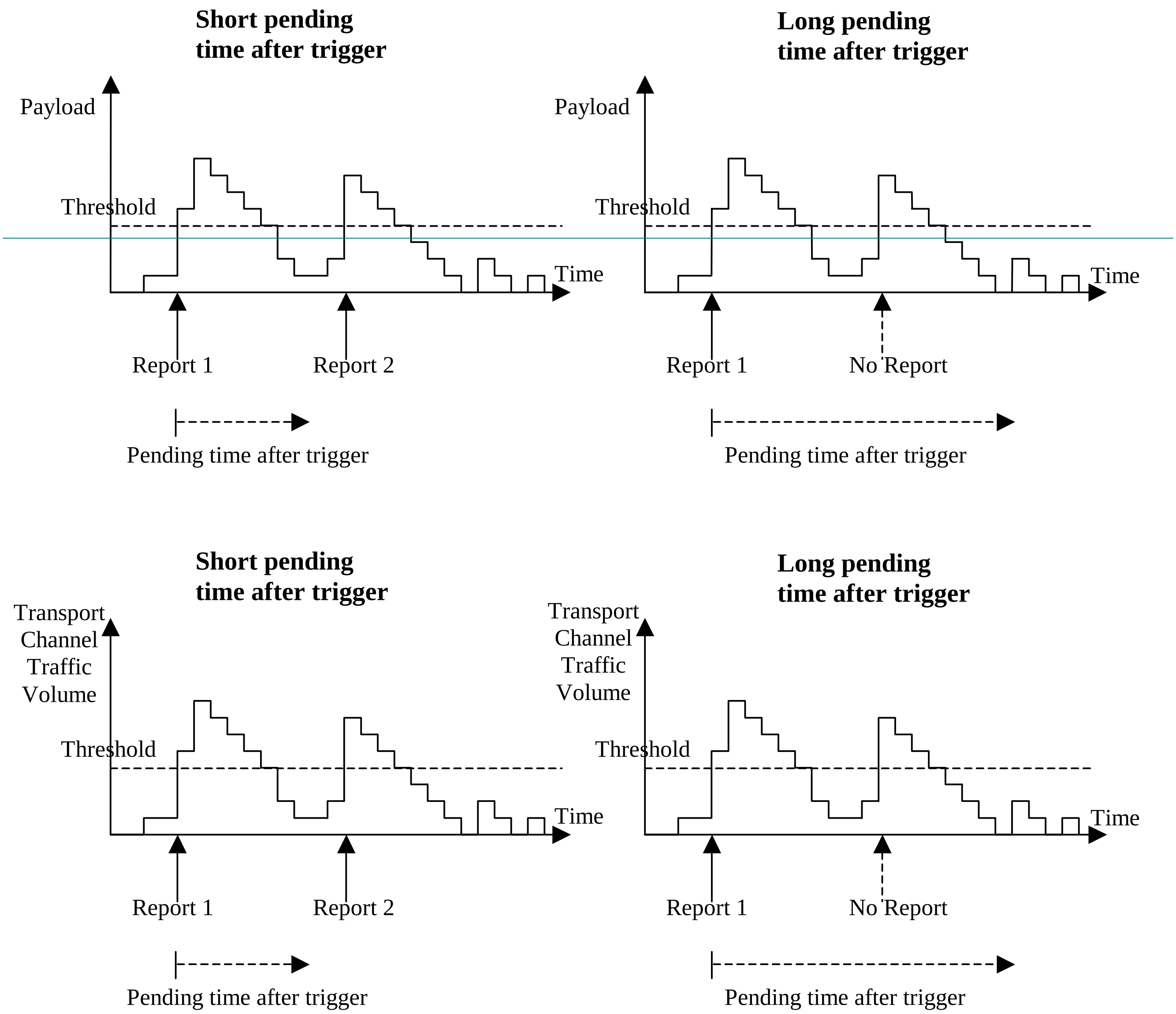


Figure 80: Pending time after trigger limits the amount of consecutive measurement reports

Figure 80 shows that by increasing the pending time after trigger a triggered second event does not result in a measurement report.

CR-Form-v3

CHANGE REQUEST

⌘	25.331	CR	650	⌘ rev	r2	⌘ Current version:	3.5.0	⌘

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

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

Title: ⌘	Reserved TFCI for the TDD Special Burst		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘		***Date:*** ⌘	2001-02-02
Category: ⌘	**F**	***Release:*** ⌘	R99

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

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

Reason for change: ⌘	In TDD a Special Burst is used for fast initial DPCH establishment and avoiding erroneous out-of-sync detection during DTX. The TDD Special Burst is uniquely identified by a "known" TFCI. Therefore, it is proposed to maintain a reserved TFCI value, which shall not be specified in the TFCS.
Summary of change: ⌘	In TDD mode TFC list in TFCS starts with TFCI = 1.
Consequences if not approved: ⌘	TDD DPCH Special Burst TFCI conflict with signalled DCH TFCS.

Clauses affected: ⌘	10.3.5.15, 10.3.5.16
Other specs affected: ⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications
Other comments: ⌘	

How to create CRs using this form:

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

10.3.5.15 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 in FDD and 1 in TDD, the second to transport format combination 1 in FDD and 2 in TDD, and so on when it is used besides the case of TFCS *Addition*. Integer number of CTFC calculated according to clause 14. In TDD the TFCI value = 0 is reserved for physical layer use.

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*.

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE CTFC Size	MP			
>2 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>2bit CTFC	MP		Integer(0..3)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>4 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>4bit CTFC	MP		Integer(0..15)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>6 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>6 bit CTFC	MP		Integer(0..63)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>8 bit CTFC				
>>CTFC information	MP	1 to <MaxTFC>		
>>>8 bit CTFC	MP		Integer(0..255)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>12 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>12 bit CTFC	MP		Integer(0..4095)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>16 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>16 bit CTFC	MP		Integer(0..65535)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>24 bit CTFC				
>>CTFC information	MP	1 to <MaxTFC>		
>>>24 bit CTFC	MP		Integer(0..16777215)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.

10.3.5.16 TFCS Removal Information

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

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Removal TFCI information	MP	1 to <maxTFC>		
>TFCI	MP		Integer(0.. 1023)	In TDD 0 is a reserved value

Range Bound	Explanation
MaxDelTFCcount	Maximum number of Transport Format Combinations to be removed.

3GPP TSG-RAN WG2 Meeting #19
Sophia Antipolis, France, 19 - 23 Feb. 2001

R2-010363

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**653**	⌘ rev	**-**	⌘	Current version:	**3.5.0** ⌘

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

Title: ⌘	Correction to description of RRC state transitions			
Source: ⌘	TSG-RAN WG2			
Work item code: ⌘			***Date:*** ⌘	30 Jan. 2001
Category: ⌘	**F**		***Release:*** ⌘	R99
	Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.			*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	a) RRC CONNECTION REESTABLISHMENT message has been removed in TS 25.331. (Annex B.3.2.1) b) CELL UPDATE message is not used for triggering of state transition, but it is used for notification of state transition. (Annex B.3.3.1, B.3.4.1) c) Editorial modifications. (Annex B.3.2.2, B.3.2.4, B.3.4.3)
Summary of change: ⌘	Some editorial modifications are needed in Annex B.
Consequences if not approved: ⌘	

Clauses affected: ⌘	B.3.2.1, B.3.2.2, B.3.2.4, B.3.3.1, B.3.4.1, B.3.4.3	
Other specs Affected: ⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘
Other comments: ⌘		

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

Annex B (informative): Description of RRC state transitions

B.3.2.1 Transition from CELL_FACH to CELL_DCH state

A transition occurs, when a dedicated physical channel is established via explicit signalling (e.g. PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, RADIO BEARER SETUP, ~~RRC CONNECTION REESTABLISHMENT~~, TRANSPORT CHANNEL RECONFIGURATION, etc.).

B.3.2.2 Transition from CELL_FACH to CELL_PCH state

The transition occurs when UTRAN orders the UE to move to CELL_PCH state, which is done via explicit signalling (e.g, CELL UPDATE CONFIRM, RADIO BEARER RECONFIGURATION, etc.).

B.3.2.4 Transition from CELL_FACH to URA_PCH State

The transition occurs when UTRAN orders the UE to move to URA _PCH state, which is done via explicit signalling (e.g. URA UPDATE CONFIRM, RADIO BEARER RECONFIGURATION, etc.).

B.3.3.1 Transition from CELL_PCH to CELL_FACH state

The UE is transferred to CELL_FACH state:

a) by paging from UTRAN (PAGING TYPE1 message)

b) through any uplink access ~~(CELL UPDATE message)~~

B.3.4.1 Transition from URA_PCH State to CELL_FACH State (URA_PCH)

Any activity causes the UE to be transferred to CELL_ FACH State.

a) Uplink access is performed by RACH ~~(CELL UPDATE message)~~.

b) by paging from UTRAN (PAGING TYPE1 message).

NOTE: The release of an RRC connection is not possible in the URA_PCH State. The UE will first move to CELL_FACH State to perform the release signalling.

B.3.4.3 RRC Connection mobility tasks (URA_PCH)

In URA_PCH State the location of a UE is known on UTRAN Registration area level.

In this state, the UE mobility is performed through URA reselection procedures, which may differ from the definitions in ~~S2.04~~ [4]. The UE performs cell reselection and upon selecting a new UTRA cell belonging to an URA which does not match the URA used by the UE, the UE moves to CELL_FACH state and initiates a URA update towards the network. After the URA update procedure has been performed, the UE changes its state back to URA_PCH state if neither the UE nor the network has any more data to transmit.

3GPP TSG-RAN WG2 Meeting #19 ***Tdoc R2-010378***
Sophia Antipolis, France, 19 - 23 February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.331**	**CR**	**657**	⌘ rev	**-**	⌘ Current version:	**3.5.0** ⌘

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

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

Title: ⌘	RLC re-establish correction		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘		***Date:*** ⌘	2001-02-14
Category: ⌘	**F**	***Release:*** ⌘	R99

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

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

Reason for change: ⌘

Summary of change: ⌘

1. The terminology is made consistent between RLC and RRC. "RLC reset" when requested by RRC is denoted "RLC re-establishment", to differentiate between the RLC reset procedure(transmission of reset PDUs) and the "RLC re-establishment" which is a local reset requested by RRC (without transmission of reset PDUs).

2. The handling of HFN in case of RLC re-establishment is described. It is clarified that the START value in the latest transmitted CELL UPDATE message is used to initialise HFN after the re-establishment.

3. The re-establish indicator (old: reset indicator) is changed, so that RB4 is grouped together with RB>4. To align terminology, re-establishment of "c-plane" and "u-plane" is replaced by re-establishment of "RB2 and RB3" and "RB>3" respectively (as RB4 is not a part of the U-plane).

4. The tabular for CELL_UPDATE_CONFIRM is aligned with ASN.1

5. For RLC unrecoverable error, references to 25.322 is added.

6. A variable LATEST_CONFIGURED_CN_DOMAIN is added to store the CN domain that is used for ciphering/integrity protection for each RB.

Consequences if not approved: ⌘ Unsynchronised HFN between UTRAN and UE in case of RLC re-establishment==>ciphering failure. Inconsistency between specs. Unclear functionality.

Clauses affected: ⌘ 8.1.12.3, 8.3.1.1, 8.3.1.2, 8.3.1.3, 8.3.1.5, 8.3.1.6, 10.2.7, 10.2.8, 10.3.3.35, 11.2, 13.4.x (new)

Other specs ⌘ [X] Other core specifications ⌘ 25.322

affected:	☐ Test specifications ☐ O&M Specifications	
Other comments:	⌘	

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8.1.12.3 Reception of SECURITY MODE COMMAND message by the UE

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

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

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

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

- if a new integrity protection key has been received or a new ciphering key has been received;
  - set the variable LATEST_CONFIGURED_CN_DOMAIN equal to the IE “CN domain identity”.
- if a new integrity protection key has been received:
  - in the downlink:
    - use the new key;
    - set the HFN component of the downlink COUNT-I to zero at the RRC sequence number indicated in IE "Downlink integrity protection activation info" included in the IE "Integrity protection mode info";

  in the uplink:

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

  - use the new key;
  - set the HFN component of the downlink COUNT-C to zero at the RLC sequence number indicated in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info";
- in the uplink:
  - use the new key;
  - set the HFN component of the uplink COUNT-C to zero at the RLC sequence number indicated in IE "Radio bearer uplink ciphering activation time info".

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

8.3.1.1 General

The URA update and cell update procedures serve several main purposes:

- to notify UTRAN after re-entering service area in the URA_PCH or CELL_PCH state;
- to notify UTRAN of an RLC unrecoverable error [16] on an AM RLC entity;
- to be used as a supervision mechanism in the CELL_FACH or CELL_PCH state by means of periodical cell update;

In addition, the URA update procedure also serves the following purpose:

- to retrieve a new URA identity after cell re-selection to a cell not belonging to the current URA assigned to the UE in URA_PCH state;

In addition, the cell update procedure also serves the following purposes:

- to update UTRAN with the current cell the UE is camping on after cell reselection;
- to act on a radio link failure in the CELL_DCH state;
- when triggered in the URA_PCH or CELL_PCH state, to notify UTRAN of a transition to the CELL_FACH state due to the reception of UTRAN originated paging or due to a request to transmit uplink data.

The URA update and cell update procedures may:

- include an update of mobility related information in the UE;
- cause a state transition from the CELL_FACH state to the CELL_DCH, CELL_PCH or URA_PCH states or idle mode.

The cell update procedure may also include:

- a ~~reset~~re-establish of AM RLC entities;
- a radio bearer release, radio bearer reconfiguration, transport channel reconfiguration or physical channel reconfiguration;

8.3.1.2 Initiation

A UE shall initiate the cell update procedure in the following cases:

- Uplink data transmission:
  - if the UE is in URA_PCH or CELL_PCH state; and
  - if the UE has uplink data or a signalling message on RB 1 or upwards to transmit:
    - perform cell update using the cause "uplink data transmission".
- Paging response:
  - if the criteria for performing cell update with the cause specified above in the current subclause is not met; and
  - if the UE in URA_PCH or CELL_PCH state, receives a PAGING TYPE 1 message fulfilling the conditions for initiating a cell update procedure specified in subclause 8.1.2.3:
    - perform cell update using the cause "paging response".
- Re-entering service area:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE has been out of service area and re-enters service area before T307 or T317 expires:
    - perform cell update using the cause "re-entering service area".
- Radio link failure:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_DCH state; and
  - if the criteria for radio link failure is met as specified in subclause 8.5.6:
    - perform cell update using the cause "radio link failure".
- RLC unrecoverable error:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE detects RLC unrecoverable error [16] in an AM RLC entity:
    - perform cell update using the cause "RLC unrecoverable error".
- Cell reselection:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE performs cell re-selection:
    - perform cell update using the cause "cell reselection".
- Periodical cell update:

- if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
- if the UE is in CELL_FACH or CELL_PCH state; and
- if the timer T305 expires; and
- if the criteria for "in service area" as specified in subclause 8.5.5.2 is fulfilled; and
- if periodic cell updating has been requested in system information block type 1:
  - perform cell update using the cause "periodical cell update".

A UE in URA_PCH state shall initiate the URA update procedure in the following cases:

- URA reselection:
  - if the criteria for performing URA update with the cause as specified above is not met; and
  - if the UE detects that the current URA assigned to the UE, stored in the variable URA_IDENTITY, is not present in the list of URA identities in system information block type 2:
    - perform URA update using the cause "URA reselection".
- Periodic URA update:
  - if none of the criteria for performing cell update with the causes as specified above is met; and
  - if the timer T305 expires while the UE is in the service area; and
    - periodic URA updating has been requested in system information block type 1:
      - perform URA update using the cause "periodic URA update".

When initiating the URA update or cell update procedure, the UE shall:

- stop timer T305;
- if the UE is in CELL_DCH state:
  - in the variable RB_TIMER_INDICATOR, set the IE "T314 expired" and the IE "T315 expired" to FALSE;
  - if the stored values of the timer T314 and timer T315 are both equal to zero:
    - release all its radio resources;
    - enter idle mode;
    - indicate to the non-access stratum local end release of the signalling connections and all established radio access bearers in the variable ESTABLISHED_RABS;
    - perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
    - And the procedure ends.
  - if the stored value of the timer T314 is equal to zero:
    - release all radio bearers, associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";
    - in the variable RB_TIMER_INDICATOR set the IE "T314 expired" to TRUE;
  - if the stored value of the timer T315 is equal to zero:
    - release all radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";
    - in the variable RB_TIMER_INDICATOR set the IE "T315 expired" to TRUE;

    - if the stored value of the timer T314 is greater than zero:
        - re-start timer T314;
    - if the stored value of the timer T315 is greater than zero:
        - re-start timer T315;
    - for the released radio bearer(s):
        - delete the information about the radio bearer from the variable ESTABLISHED_RABS;
        - when all radio bearers belonging to the same radio access bearer have been released:
            - indicate local end release of the radio access bearer to the upper layer entity using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;
            - delete all information about the radio access bearer from the variable ESTABLISHED_RABS;
- set the variables PROTOCOL_ERROR_INDICATOR, FAILURE_INDICATOR, UNSUPPORTED_CONFIGURATION and INVALID_CONFIGURATION to FALSE;
- move to CELL_FACH state, if not already in that state;
- if the UE performs cell re-selection:
    - clear the variable C_RNTI; and
    - stop using that C_RNTI just cleared from the variable C_RNTI in MAC;
- set CFN in relation to SFN of current cell according to subclause 8.5.15;
- set the contents of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;
- submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;
- reset counter V302;
- start timer T302 when the MAC layer indicates success or failure in transmitting the message.

8.3.1.3 CELL UPDATE / URA UPDATE message contents to set

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

In case of URA update procedure the UE shall transmit a URA UPDATE message.

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

- set the IE "Cell update cause" corresponding to the cause specified in subclause 8.3.1.2 that is valid when the CELL UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a cell update procedure is initiated by the UE until when the procedure ends, different causes may be used in different individually transmitted CELL UPDATE messages by the UE.

- set the IE "U-RNTI" to the value of the variable U_RNTI;
- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE:
    - include the IE "RRC transaction identifier"; and
        - set it to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
    - include and set the IE "failure cause" to the cause value "protocol error";

    - set the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- if the value of the variable FAILURE_INDICATOR is TRUE:
    - include the IE "RRC transaction identifier"; and
        - set it to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;
    - include and set the IE "failure cause" to the value of the variable FAILURE_CAUSE;
- include the START values for each CN domain, calculated according to subclause 8.5.9;
- if an unrecoverable error [16] in any of the AM RLC entities for the RB 2 or 3 is detected:
    - set the IE "AM_RLC error indication (~~for c-plane~~RB2 or RB3)" to TRUE;
- otherwise:
    - set the IE "AM_RLC error indication (~~for c-plane~~RB2 or RB3)" to FALSE;
- if an unrecoverable error [16] in any of the AM RLC entities for the RB ~~5~~4 or upwards is detected:
    - set the IE "AM_RLC error indication (~~for u-plane~~RB>3)" to TRUE;
- otherwise:
    - set the IE "AM_RLC error indication (~~for u-plane~~RB>3)" to FALSE;
- set the IE "RB Timer indicator" to the value of the variable RB_TIMER_INDICATOR;
- include an intra-frequency measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in system information block type 12 (or System Information Block type 11, if System Information Block type 12 is not being broadcast).

The UE shall set the IEs in the URA UPDATE message as follows:

- set the IE "U-RNTI" to the value of the variable U_RNTI;
- set the IE "URA update cause" corresponding to which cause as specified in subclause 8.3.1.2 that is valid when the URA UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a URA update procedure is initiated by the UE until when the procedure ends, different causes may be used in different individually transmitted URA UPDATE messages by the UE, depending on which causes are valid for the respective URA UPDATE message.

    - if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE:
        - include the IE "RRC transaction identifier"; and
            - set it to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
        - set the IE "Protocol error indicator" to TRUE;
        - 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:
        - set the IE "Protocol error indicator" to FALSE.

8.3.1.4 T305 expiry and the UE detects "out of service area"

When the T305 expires and the UE detects that it is "out of service area" as specified in subclause 8.5.5.1, the UE shall

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

8.3.1.4.1 Re-entering "in service area"

If the UE detects "in service area" according to subclause 8.5.5.2 and timer T307 or T317 is running, the UE shall:

- check the value of V302; and
- if V302 is equal to or smaller than N302:
    - set the contents of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;
    - increment counter V302;
    - restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- if V302 is greater than N302:
    - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
    - clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
    - release all its radio resources;
    - enter idle mode;
    - a connection failure may be indicated to the non-access stratum;
    - perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
    - and the procedure ends.

8.3.1.4.2 Expiry of timer T307

When the T307 expires, the UE shall:

- move to idle mode;
- release all dedicated resources;
- indicate an RRC connection failure to the non-access stratum.
- perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2.
- and the procedure ends.

8.3.1.5 Reception of an CELL UPDATE/URA UPDATE message by the UTRAN

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

- in case the procedure was triggered by reception of a CELL UPDATE, transmit a CELL UPDATE CONFIRM message on the downlink DCCH or optionally on the CCCH but only if ciphering is not required; and
    - optionally include the IE “RLC re-establish indicator” to request a RLC re-establishment in the UE, in which case the corresponding RLC entities should also be re-established in UTRAN; or

~~or~~

- in case the procedure was triggered by reception of a URA UPDATE, transmit a URA UPDATE CONFIRM message to the lower layers for transmission on the downlink CCCH or DCCH in which case the UTRAN should include the IE "URA identity" in the URA UPDATE CONFIRM message in a cell where multiple URA identifiers are broadcast; or
- initiate an RRC connection release procedure (see subclause 8.1.4) by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH.

8.3.1.6 Reception of the CELL UPDATE CONFIRM/URA UPDATE CONFIRM message by the UE

When the UE receives a CELL UPDATE CONFIRM/URA UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U_RNTI, or;
- if the message is received on DCCH;

the UE shall:

- stop timer T302;
- act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following:
  - use the transport channel(s) applicable for the physical channel types that is used; and
  - if the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s):
    - use the TFS given in system information.
  - if none of the TFS stored is compatible with the physical channel:
    - delete the stored TFS;
    - use the TFS given in system information.
  - if the CELL UPDATE CONFIRM message includes the IE "RLC ~~reset~~re-establish indicator (RB2 and RB3~~for C-plane~~)":
    - ~~reset~~re-establish the RLC entities for RB 2 ~~,~~and RB 3;~~ and, if present, RB 4.~~
    - If the variable CIPHERING_STATUS is set to "Started;
      - Set the HFN values for AM RLC entities with RB identity 2 and 3 equal to the START value included in the latest transmitted CELL UPDATE message for the CN domain stored in the variable LATEST_CONFIGURED_CN_DOMAIN.
  - if the CELL UPDATE CONFIRM message includes the IE "RLC ~~reset~~re-establish indicator (~~for U-plane~~RB>3)":
    - ~~reset~~re-establish the AM RLC entities for RB with RB identity equal to or larger than 4~~5 and upwards~~;
    - If the variable CIPHERING_STATUS is set to "Started;
      - Set the HFN values for AM RLC entities with RB identity equal to or larger than 4 equal to the START value included in the latest transmitted CELL UPDATE message for the CN domain stored in the variable LATEST_CONFIGURED_CN_DOMAIN.~~.~~
- enter a state according to subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

If the UE after state transition remains CELL_FACH state, it shall

- start the timer T305 if timer T305 is not running and periodical cell update has been requested in system information block type 1;
- select PRACH according to subclause 8.6.6.2;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - ignore that IE and stop using DRX;

If the UE after state transition enters URA_PCH or CELL_PCH state, it shall

- clear the variable C_RNTI;
- stop using that C_RNTI just cleared fro the variable C_RNTI in MAC;
- start the timer T305 if timer T305 is not running and periodical URA update or cell update has been requested in system information block type 1;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging Occasion and PICH Monitoring Occasion as specified in 8.6.3.2 in CELL_PCH state.

If the UE after the state transition remains in CELL_FACH state and;

- the contents of the variable C_RNTI are empty;

it shall check the value of V302 and

- If V302 is equal to or smaller than N302:
  - set the content of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- If V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - enter idle mode;
  - 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;
  - the procedure ends.

If the UE after the state transition remains in CELL_FACH state and

- a C-RNTI is stored in the variable C_RNTI;

  or

the UE after the state transition moves to another state than the CELL_FACH state;

the UE shall:

- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
  - include and set the IE "Radio bearer uplink ciphering activation time info" in any response message transmitted below to the value of that variable;
- set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry.
- if the variable PDCP_SN_INFO is non-empty:
  - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;
- transmit a response message as specified in subclause 8.3.1.7;
- clear the variable PDCP_SN_INFO;
- clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS.

The procedure ends.

8.3.1.7 Transmission of a response message to UTRAN

If the CELL UPDATE CONFIRM message

- includes the IE "RB information to release list";

the UE shall:

- transmit a RADIO BEARER RELEASE COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include the IE "RB information to release list"; and
- includes the IE "RB information to reconfigure list "; or
- includes the IE "RB information to be affected list ";

the UE shall:

- transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- includes "Transport channel information elements";

the UE shall:

- transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and

- includes "Physical channel information elements";

the UE shall:

- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI";

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI";

the UE shall:

- transmit no response message.

If the URA UPDATE CONFIRM message:

- includes any one or both of the IEs "New C-RNTI" and "New U-RNTI";

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

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

- if the variable PDCP_SN_INFO is empty:
  - if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
    - when RLC has confirmed the successful transmission of the response message:
      - continue with the remainder of the procedure.
  - if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is not set:
    - when RLC has been requested to transmit the response message,
      - continue with the remainder of the procedure.
- if the variable PDCP_SN_INFO non-empty:

  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP_SN_INFO:
      - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";
    - continue with the remainder of the procedure.

If the new state is CELL_PCH or URA_PCH, the response message shall be transmitted in CELL_FACH state, and the UE shall:

- when RLC has confirmed the successful transmission of the response message:
  - for each radio bearer in the variable PDCP_SN_INFO:
    - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
      - configure the RLC entity for that radio bearer to "continue";
  - enter the new state (CELL_PCH or URA_PCH, respectively);
- continue with the remainder of the procedure.

8.3.1.8 Unsupported configuration by the UE

If the UE does not support the configuration in the CELL UPDATE CONFIRM message and/or the variable UNSUPPORTED_CONFIGURATION is set to TRUE, the UE shall:

- if V302 is equal to or smaller than N302, the UE shall:
  - set the variable FAILURE_INDICATOR to TRUE;
  - set the variable FAILURE_CAUSE to "Unsupported configuration";
  - set the content of the CELL UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - enter idle mode.
  - 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;
  - And the procedure ends.

10.2.7 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/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
U-RNTI	MP		U-RNTI 10.3.3.47	
RRC transaction identifier	CV-*Failure*		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
START list	MP	1 to <maxCNdomains>		START [TS 33.102] values for all CN domains.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	START value to be used in this CN domain.
AM_RLC error indication(~~for c-plane~~RB2 or RB3)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error [16] occurred on ~~c-plane~~ RB2 or RB3 in the UE
AM_RLC error indication(~~for u-plane~~RB>3)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error [16] occurred on RB>3~~u-plane~~ in the UE
Cell update cause	MP		Cell update cause 10.3.3.3	
Failure cause	OP		Failure cause and error information 10.3.3.14	
RB timer indicator	MP		RB timer indicator 10.3.3.28	
Measurement information elements				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

Condition	Explanation
Failure	This IE is mandatory if the IE "Failure cause" is present. Otherwise it is absent.

10.2.8 CELL UPDATE CONFIRM

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

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
U-RNTI	CV-CCCH		U-RNTI 10.3.3.47	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
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 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing DRX cycle length coefficient
RLC ~~reset~~re-establish indicator (~~for C-plane~~RB2 and RB3)	MP~~D~~		RLC ~~reset~~re-establish indicator 10.3.3.35	
RLC ~~reset~~re-establish indicator (~~for U-plane~~RB4 and upwards)	MP~~D~~		RLC ~~reset~~re-establish indicator 10.3.3.35	
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
UTRAN Information Elements				
URA identity	OP		URA identity 10.3.2.6	
RB information elements				
RB information to release list	OP		1 to <maxRB>	
>RB information to release	MP		RB information to release 10.3.4.19	

RB information to reconfigure list	OP	1 to <maxRB>		
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information to be affected 10.3.4.17	
RB with PDCP information list	OP	1 to <maxRBallRABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE *mode*	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
Downlink transport channels				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH>		

>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
CHOICE *channel requirement*	OP			
>Uplink DPCH info			Uplink DPCH info 10.3.6.88.	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
Downlink radio resources				
CHOICE *mode*				
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

Condition	Explanation
CCCH	This IE is mandatory when CCCH is used and ciphering is not required. Otherwise it is absent.

10.3.3.35 RLC ~~reset~~re-establish indicator

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RLC ~~reset~~re-establish indicator	MP		Boolean	TRUE means ~~reset~~re-establish required FALSE means ~~reset~~re-establish not required

11.2 PDU definitions

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

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS

-- Core Network IEs :
    CN-DomainIdentity,
    CN-InformationInfo,
    NAS-Message,
    PagingRecordTypeID,
-- UTRAN Mobility IEs :
    URA-Identity,
-- User Equipment IEs :
    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CellUpdateCause,
    CipheringAlgorithm,
    CipheringModeInfo,
    EstablishmentCause,
    FailureCauseWithProtErr,
    FailureCauseWithProtErrTrId,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    N-308,
    PagingCause,
    PagingRecordList,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithMoreInfo,
    Rb-timer-indicator,
    Re-EstablishmentTimer,
    RedirectionInfo,
    RejectionCause,
    ReleaseCause,
    RRC-StateIndicator,
    RRC-TransactionIdentifier,
    SecurityCapability,
    START-Value,
    STARTList,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    UE-ConnTimersAndConstants,
    URA-UpdateCause,
    UTRAN-DRX-CycleLengthCoefficient,
    WaitTime,
-- Radio Bearer IEs :
    PredefinedConfigIdentity,
    RAB-Info,
    RAB-Info-Post,
    RAB-InformationList,
    RAB-InformationReconfigList,
    RAB-InformationSetupList,
    RB-ActivationTimeInfo,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,
    RB-COUNT-C-MSB-InformationList,
    RB-IdentityList,
    RB-InformationAffectedList,
    RB-InformationReconfigList,
    RB-InformationReleaseList,
```

```
    RB-InformationSetupList,
    RB-WithPDCP-InfoList,
    SRB-InformationSetupList,
    SRB-InformationSetupList2,
-- Transport Channel IEs:
    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-CommonTransChInfo,
    DL-DeletedTransChInfoList,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-CommonTransChInfo,
    UL-DeletedTransChInfoList,
-- Physical Channel IEs :
    AllocationPeriodInfo,
    Alpha,
    CCTrCH-PowerControlInfo,
    ConstantValue,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformationPost,
    DL-InformationPerRL,
    DL-InformationPerRL-List,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-DPCH-PowerControlInfo,
    DL-PDSCH-Information,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    IndividualTS-InterferenceList,
    MaxAllowedUL-TX-Power,
    PDSCH-CapacityAllocationInfo,
    PDSCH-Identity,
    PDSCH-Info,
    PRACH-RACH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-Identity,
    RL-AdditionInformationList,
    RL-RemovalInformationList,
    SSDT-Information,
    TFC-ControlDuration,
    TimeslotList,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-ChannelRequirementWithCPCH-SetID,
    UL-DPCH-Info,
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-TimingAdvance,
    UL-TimingAdvanceControl,
-- Measurement IEs :
    AdditionalMeasurementID-List,
    EventResults,
    InterRAT-TargetCellDescription,
    MeasuredResults,
    MeasuredResultsList,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementIdentity,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList,
    UP-GPS-AssistanceData,
    UP-OTDOA-AssistanceData,
-- Other IEs :
    BCCH-ModificationInfo,
    CDMA2000-MessageList,
    GSM-MessageList,
    InterRAT-ChangeFailureCause,
    InterRAT-HO-Failure,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRATMessage,
    IntraDomainNasNodeSelector,
    ProtocolErrorInformation,
    ProtocolErrorMoreInformation,
    Rplmn-Information,
    SegCount,
```

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

    maxSIBperMsg,
    maxSystemCapability
FROM Constant-definitions;

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

ActiveSetUpdate-r3 ::= CHOICE {
    r3                              SEQUENCE {
        activeSetUpdate-r3              ActiveSetUpdate-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

ActiveSetUpdate-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        newU-RNTI                       U-RNTI                              OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        rl-AdditionInformationList      RL-AdditionInformationList          OPTIONAL,
        rl-RemovalInformationList       RL-RemovalInformationList           OPTIONAL,
        tx-DiversityMode                TX-DiversityMode                    OPTIONAL,
        ssdt-Information                SSDT-Information                    OPTIONAL
}

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

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

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

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

-- ***************************************************
--
-- Assistance Data Delivery
--
-- ***************************************************

AssistanceDataDelivery-r3 ::= CHOICE {
    r3                              SEQUENCE {
```

```
		assistanceDataDelivery-r3		AssistanceDataDelivery-r3-IEs,
		nonCriticalExtensions			SEQUENCE {} OPTIONAL
	},
	criticalExtensions				SEQUENCE {}
}

AssistanceDataDelivery-r3-IEs ::= SEQUENCE {
	--Assistance Data Information Elements
	up-GPS-AssistanceData			UP-GPS-AssistanceData				OPTIONAL,
	up-OTDOA-AssistanceData		UP-OTDOA-AssistanceData			OPTIONAL
}

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

CellChangeOrderFromUTRAN-r3 ::= CHOICE {
	r3								SEQUENCE {
		cellChangeOrderFromUTRAN-IEs		CellChangeOrderFromUTRAN-r3-IEs,
		nonCriticalExtensions			SEQUENCE {} OPTIONAL
	},
	criticalExtensions				SEQUENCE {}
}

CellChangeOrderFromUTRAN-r3-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo			OPTIONAL,
		activationTime					ActivationTime						OPTIONAL,
		rab-InformationList				RAB-InformationList					OPTIONAL,
		interRAT-TargetCellDescription	InterRAT-TargetCellDescription
}

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

CellChangeFailureFromUTRAN ::= CHOICE {
	r3								SEQUENCE {
		r3-IEs							CellChangeFailureFromUTRAN-r3-IEs,
		nonCriticalExtensions			SEQUENCE {} OPTIONAL
	},
	criticalExtensions				SEQUENCE {}
}

CellChangeFailureFromUTRAN-r3-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo			OPTIONAL,
		interRAT-ChangeFailureCause		InterRAT-ChangeFailureCause
}

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

CellUpdate ::= SEQUENCE {
	-- User equipment IEs
		u-RNTI							U-RNTI,
		startList		STARTList,
		am-RLC-ErrorIndicationC-planeRb2or3 BOOLEAN,
		am-RLC-ErrorIndicationU-planeRb4orAbove BOOLEAN,
		cellUpdateCause					CellUpdateCause,
		failureCause					FailureCauseWithProtErrTrId			OPTIONAL,
		-- TABULAR: RRC transaction identifier is nested in FailureCauseWithProtErrTrId
		rb-timer-indicator				Rb-timer-indicator,
	-- Measurement IEs
		measuredResultsOnRACH			MeasuredResultsOnRACH				OPTIONAL,
	-- Extension mechanism for non- release99 information
		nonCriticalExtensions			SEQUENCE {} OPTIONAL
}

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

CellUpdateConfirm-r3 ::= CHOICE {
```

```
    r3                              SEQUENCE {
        cellUpdateConfirm-r3            CellUpdateConfirm-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

CellUpdateConfirm-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-~~Reset~~Re-establishIndicator~~C-Plane~~Rb2and3       BOOLEAN,
        rlc-~~Reset~~Re-establishIndicator~~U-Plane~~Rb4andAbove        BOOLEAN,
 -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList          OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

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

CellUpdateConfirm-CCCH-r3 ::= CHOICE {
    r3                              SEQUENCE {
        -- User equipment IEs
            u-RNTI                      U-RNTI,
        -- The rest of the message is identical to the one sent on DCCH.

            cellUpdateConfirm-r3                CellUpdateConfirm-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

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

CounterCheck-r3 ::= CHOICE {
    r3                              SEQUENCE {
        counterCheck-r3                 CounterCheck-r3-IEs,
```

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

CounterCheck-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Radio bearer IEs
        rb-COUNT-C-MSB-InformationList  RB-COUNT-C-MSB-InformationList
}

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

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

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

DownlinkDirectTransfer-r3 ::= CHOICE {
    r3                              SEQUENCE {
        downlinkDirectTransfer-r3       DownlinkDirectTransfer-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

DownlinkDirectTransfer-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
        nas-Message                     NAS-Message
}

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


HandoverToUTRANCommand-r3 ::= CHOICE {
    r3                              SEQUENCE {
        handoverToUTRANCommand-r3       HandoverToUTRANCommand-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

HandoverToUTRANCommand-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        activationTime                  ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
        rab-Info                        RAB-Info-Post,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList,
                rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
                ul-DPCH-Info                    UL-DPCH-Info,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
```

```
                        dl-PDSCH-Information            DL-PDSCH-Information OPTIONAL,
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation,
                dl-InformationPerRL-List        DL-InformationPerRL-List,
                frequencyInfo                   FrequencyInfo
            },
            preconfiguration                SEQUENCE {
-- All IEs that include an FDD/TDD choice are split in two IEs for this message,
-- one for the FDD only elements and one for the TDD only elements, so that one
-- FDD/TDD choice in this level is sufficient.
                predefinedConfigIdentity        PredefinedConfigIdentity,
                rab-Info                        RAB-Info-Post       OPTIONAL,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostFDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL-List        DL-InformationPerRL-ListPostFDD,
                        frequencyInfo                   FrequencyInfoFDD
                    },
                    tdd                                 SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                        dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                        frequencyInfo                   FrequencyInfoTDD,
                        primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                    }

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

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

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

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

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

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

HandoverFromUTRANCommand-GSM-r3 ::= CHOICE {
    r3                              SEQUENCE {
        handoverFromUTRANCommand-GSM-r3
                                        HandoverFromUTRANCommand-GSM-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}
```

```
HandoverFromUTRANCommand-GSM-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        activationTime                  ActivationTime                      OPTIONAL,
    -- Radio bearer IEs
        remainingRAB-Info               RAB-Info                            OPTIONAL,
    -- Other IEs
        message-and-extension           CHOICE {
            gsm-Message                     SEQUENCE {},
            -- In this case, what follows the basic production is a variable length bit string
            -- with no length field, containing the GSM message including GSM padding up to end
            -- of container, to be analysed according to GSM specifications
            with-extension                  SEQUENCE {
                messages                        GSM-MessageList
            }
        }
}

HandoverFromUTRANCommand-CDMA2000-r3 ::= CHOICE {
    r3                              SEQUENCE {
        handoverFromUTRANCommand-CDMA2000-r3
                                        HandoverFromUTRANCommand-CDMA2000-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

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

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

HandoverFromUTRANFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Other IEs
        interRAT-HO-Failure         InterRAT-HO-Failure             OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

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

MeasurementControl-r3 ::= CHOICE {
    r3                              SEQUENCE {
        measurementControl-r3           MeasurementControl-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

MeasurementControl-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Measurement IEs
        measurementIdentity     MeasurementIdentity,
        measurementCommand              MeasurementCommand,
        -- TABULAR: The measurement type is included in MeasurementCommand.
        measurementReportingMode        MeasurementReportingMode            OPTIONAL,
        additionalMeasurementList       AdditionalMeasurementID-List        OPTIONAL,
    -- Physical channel IEs
        dpch-CompressedModeStatusInfo   DPCH-CompressedModeStatusInfo       OPTIONAL
}

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

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

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

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

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

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

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

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

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

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

PhysicalChannelReconfiguration-r3 ::= CHOICE {
    r3                              SEQUENCE {
        physicalChannelReconfiguration-r3
                                        PhysicalChannelReconfiguration-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

PhysicalChannelReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
```

```
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID     OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

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

PhysicalChannelReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
    -- Radio bearer IEs
        count-C-ActivationTime          ActivationTime                      OPTIONAL,
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfoList           OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

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

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

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

PhysicalSharedChannelAllocation-r3 ::= CHOICE {
    r3                              SEQUENCE {
        physicalSharedChannelAllocation-r3
                                        PhysicalSharedChannelAllocation-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

PhysicalSharedChannelAllocation-r3-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        c-RNTI                          C-RNTI                              OPTIONAL,
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Physical channel IEs
        ul-TimingAdvance                UL-TimingAdvanceControl             OPTIONAL,
        pusch-CapacityAllocationInfo    PUSCH-CapacityAllocationInfo        OPTIONAL,
        pdsch-CapacityAllocationInfo    PDSCH-CapacityAllocationInfo        OPTIONAL,
        confirmRequest                  ENUMERATED {
                                            confirmPDSCH, confirmPUSCH }    OPTIONAL,
```

```
        -- TABULAR: If the above value is not present, the default value "No Confirm"
        -- shall be used as specified in 10.2.25.
        iscpTimeslotList                    TimeslotList                        OPTIONAL
}

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

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

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

RadioBearerReconfiguration-r3 ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerReconfiguration-r3   RadioBearerReconfiguration-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RadioBearerReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfo2List        OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
```

```
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List
}

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

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

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

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

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

RadioBearerRelease-r3 ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerRelease-r3           RadioBearerRelease-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RadioBearerRelease-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        signallingConnectionRelIndication   CN-DomainIdentity               OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
```

```
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfo2List        OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

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

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

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

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

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

RadioBearerSetup-r3 ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerSetup-r3             RadioBearerSetup-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RadioBearerSetup-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
```

```
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

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

RadioBearerSetupComplete ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
        start-Value             START-Value                                 OPTIONAL,
    -- Radio bearer IEs
        count-C-ActivationTime          ActivationTime                      OPTIONAL,
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfoList           OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

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

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

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

RRCConnectionReject-r3 ::= CHOICE {
    r3                              SEQUENCE {
        rrcConnectionReject-r3          RRCConnectionReject-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionReject-r3-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
```

```
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        rejectionCause                  RejectionCause,
        waitTime                        WaitTime,
        redirectionInfo                 RedirectionInfo                     OPTIONAL
}

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

RRCConnectionRelease-r3 ::= CHOICE {
    r3                              SEQUENCE {
        rrcConnectionRelease-r3         RRCConnectionRelease-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionRelease-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        n-308                           N-308                               OPTIONAL,
        -- The IE above is conditional on the UE state.
        releaseCause                    ReleaseCause,
        rplmn-information               Rplmn-Information                   OPTIONAL
}

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

RRCConnectionRelease-CCCH-r3 ::= CHOICE {
    r3                              SEQUENCE {
        rrcConnectionRelease-CCCH-r3    RRCConnectionRelease-CCCH-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionRelease-CCCH-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        rrcConnectionRelease            RRCConnectionRelease-r3-IEs
}

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

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

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

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

```
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

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

RRCConnectionSetup-r3 ::= CHOICE {
    r3                              SEQUENCE {
        rrcConnectionSetup-r3           RRCConnectionSetup-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RRCConnectionSetup-r3-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI,
        new-c-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient,
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
        -- TABULAR: If the IE is not present, the default value defined in 10.3.3.2 shall
        -- be used.
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList2,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

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

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    --  Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

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

RRCStatus ::= SEQUENCE {
    -- Other IEs
        protocolErrorInformation        ProtocolErrorMoreInformation,
    -- TABULAR:  Identification of received message is nested in
    -- ProtocolErrorMoreInformation
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

SecurityModeCommand-r3 ::= CHOICE {
    r3                              SEQUENCE {
        securityModeCommand-r3          SecurityModeCommand-r3-IEs,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
    },
```

```
    criticalExtensions              SEQUENCE {}
}

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

SecurityModeCommand-r3-IEs ::= SEQUENCE {
-- TABULAR: Integrity protection shall always be performed on this message.
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        securityCapability              SecurityCapability,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity
}

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

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

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

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

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

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

SignallingConnectionRelease-r3 ::= CHOICE {
    r3                              SEQUENCE {
        signallingConnectionRelease-r3  SignallingConnectionRelease-r3-IEs,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

SignallingConnectionRelease-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity
}

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

SignallingConnectionReleaseRequest ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
    -- Extension mechanism for non- release99 information
```

```
	nonCriticalExtensions			SEQUENCE {}		OPTIONAL
}

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

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

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

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

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

FirstSegment ::=					SEQUENCE {
```

```
    -- Other information elements
        sib-Type                        SIB-Type,
        seg-Count                       SegCount,
        sib-Data-fixed                  SIB-Data-fixed
}

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

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

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

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

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

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

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

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

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

CompleteSIB ::=                     SEQUENCE {
    -- Other information elements
        sib-Type                        SIB-Type,
        sib-Data-fixed                  BIT STRING (SIZE (226))
    -- In case the SIB data is less than 226 bits, padding shall be used
    -- The same padding bits shall be used as defined in clause 12.1
}

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

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

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

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

TransportChannelReconfiguration-r3 ::= CHOICE {
    r3                              SEQUENCE {
        transportChannelReconfiguration-r3
                                        TransportChannelReconfiguration-r3-IEs,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

TransportChannelReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

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

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

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

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

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

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

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

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

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

UECapabilityEnquiry-r3 ::= CHOICE {
    r3                              SEQUENCE {
        ueCapabilityEnquiry-r3          UECapabilityEnquiry-r3-IEs,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

UECapabilityEnquiry-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        capabilityUpdateRequirement     CapabilityUpdateRequirement
}

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

UECapabilityInformation ::= SEQUENCE {
```

```
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier           OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList
    OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

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

UECapabilityInformationConfirm-r3 ::= CHOICE {
    r3                              SEQUENCE {
        ueCapabilityInformationConfirm-r3
                                        UECapabilityInformationConfirm-r3-IEs,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

UECapabilityInformationConfirm-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier
}

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

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

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

UplinkPhysicalChannelControl-r3 ::= CHOICE {
    r3                              SEQUENCE {
        uplinkPhysicalChannelControl-r3 UplinkPhysicalChannelControl-r3-IEs,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}


UplinkPhysicalChannelControl-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Physical channel IEs
        ccTrCH-PowerControlInfo         CCTrCH-PowerControlInfo             OPTIONAL,
        timingAdvance                   UL-TimingAdvanceControl             OPTIONAL,
        alpha                           Alpha                               OPTIONAL,
        prach-ConstantValue             ConstantValue                       OPTIONAL,
        pusch-ConstantValue             ConstantValue                       OPTIONAL
}

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

URAUpdate ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        ura-UpdateCause                 URA-UpdateCause,
        protocolErrorIndicator          ProtocolErrorIndicatorWithMoreInfo,
```

```
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

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

URAUpdateConfirm-r3 ::= CHOICE {
    r3                              SEQUENCE {
        uraUpdateConfirm-r3             URAUpdateConfirm-r3-IEs,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

URAUpdateConfirm-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL
}

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

URAUpdateConfirm-CCCH-r3 ::= CHOICE {
    r3                              SEQUENCE {
        uraUpdateConfirm-CCCH-r3        URAUpdateConfirm-CCCH-r3-IEs,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

URAUpdateConfirm-CCCH-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
    -- The rest of the message is identical to the one sent on DCCH.
        uraUpdateConfirm                URAUpdateConfirm-r3-IEs
}

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

UTRANMobilityInformation ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants           OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        count-C-ActivationTime          ActivationTime                      OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

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

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

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

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

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

END
```

13.4.x LATEST_CONFIGURED_CN_DOMAIN

This variable stores the CN-domain that is latest configured to be used for ciphering and integrity protection for each RB.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Latest configured CN domain	MP		CN domain identity 10.3.1.1	

3GPP TSG-RAN WG2 Meeting #19
Sophia Antipolis, France, 19- 23 February 2001

Tdoc R2-010546

CR-Form-v3

CHANGE REQUEST

⌘ 25.331	CR 658	⌘ rev r1	⌘ Current version: 3.5.0 ⌘

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

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

Title:	⌘	Removal of RLC logical channel mapping indicator
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	
Date:	⌘	2001-02-23
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
__F__ (essential correction)
__A__ (corresponds to a correction in an earlier release)
__B__ (Addition of feature),
__C__ (Functional modification of feature)
__D__ (Editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

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

Reason for change: ⌘ The current RRC specification is not aligned with 25.322 where the support for the RLC logical channel mapping indicator was removed at WG2#17.

There is currently no default vaule for the parameter “transmission RLC discard”

Summary of change: ⌘ The parameter “RLC logical channel mapping indicator” in RB mapping info is removed to reflect the changes made in 25.322 at WG2#17.

After the changes in 25.322 the “RLC logical channel mapping indicator” is no longer needed. If two logical channels are used for a RLC entiry, the first LCH is always used for data PDUs and the second LCH is always used for control PDUs.

Note: To minimize changes in ASN.1 coding for R99 the parameter is kept, but always coded as TRUE in this version of the protocol.

The parameter “transmission RLC discard” is made MD with default “RLC discard procedure shall not be used”

Changes in r1: The modifcations in the tabulars (10.3.4.23) are moved to section 8.6.4.9 after comments in plenary discussion.

Consequences if not approved: ⌘ Inconsistent specifications. Undefined default value for RLC discard.

Clauses affected: ⌘ 8.6.4.9, 10.3.4.21, 11.3

Other specs affected: ⌘ [X] Other core specifications ⌘ 25.322 (impact if CR not approved)
[ ] Test specifications
[ ] O&M Specifications

Other comments: ⌘	

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

8.6.4.9 RLC Info

If the IE "RLC Info" is included, the UE shall:

Configure the transmitting and receiving RLC entities in the UE for that radio bearer accordingly.

If the IE “Transmission RLC discard” is not included for UM RLC or TM RLC, RLC discard procedure shall not be used for that radio bearer.

10.3.4.21 RB mapping info

A multiplexing option for each possible transport channel this RB can be multiplexed on.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Information for each multiplexing option	MP	1 to <maxRBMuxOptions>		Note1
>RLC logical channel mapping indicator	CV-UL-RLCLogicalChannels		Boolean	TRUE indicates that the first logical channel shall be used for data PDUs and the second logical channel shall be used for control PDUs. FALSE indicates that control and data PDUs can be sent on either of the two logical channels. This parameter is not used in ~~R99~~this release and shall be set to TRUE. ~~in this verion of the protocol.~~
>Number of uplink RLC logical channels	CV-*UL-RLC info*	1 to MaxLoCHperRLC		1 or 2 logical channels per RLC entity or radio bearer RLC [TS 25.322]
>>Uplink transport channel type	MP		Enumerated(DCH,RACH, CPCH,USCH)	CPCH is FDD only USCH is TDD only
>>ULTransport channel identity	CV-*UL-DCH/USCH*		Transport channel identity 10.3.5.18	This is the ID of a DCH or USCH (TDD only) that this RB could be mapped onto.
>>Logical channel identity	OP		Integer(1..15)	This parameter is used to distinguish logical channels multiplexed by MAC on a transport channel.
>>CHOICE *RLC size list*	MP			The RLC sizes that are allowed for this logical channel
>>>All			Null	All RLC sizes listed in the *Transport Format Set*. 10.3.5.23
>>>Configured			Null	The RLC sizes configured for this logical channel in the *Transport Format Set*. 10.3.5.23 if present in this message or in the previously stored configuration otherwise
>>>Explicit List		1 to <maxTF>		Lists the RLC sizes that are valid for the logical channel.
>>>>RLC size index	MP		Integer(1..maxTF)	The integer number is a reference to the *RLC size* which arrived at that position in the *Transport Format Set* 10.3.5.23
>>MAC logical channel priority	MP		Integer(1..8)	This is priority between a user's different RBs (or logical channels). [25.321]
>Downlink RLC logical channel info	CV-*DL-RLC info*			

>>Number of downlink RLC logical channels	*MD*	1 to MaxLoCHperRLC		1 or 2 logical channels per RLC entity or radio bearer RLC [TS 25.322] Default value is that parameter values for DL are exactly the same as for corresponding UL logical channel. In case two multiplexing options are specified for the UL, the first options shall be used as default for the DL. As regards to the IE "Channel type", rule is specified in 8.6.4.8.
>>>Downlink transport channel type	MP		Enumerated(DCH,FACH, DSCH)	
>>>DL Transport channel identity	CV-*DL-DCH/DSCH*		Transport channel identity 10.3.5.18	
>>>Logical channel identity	OP		Integer(1..15)	16 is reserved

Condition	Explanation
UL-RLC info	If "CHOICE Uplink RLC mode" in IE "RLC info" is present this IE is MP. Otherwise the IE is not needed.
DL-RLC info	If "CHOICE Downlink RLC mode" in IE "RLC info" is present this IE is MP. Otherwise the IE is not needed.
UL-RLCLogicalChannels	If "Number of uplink RLC logical channels" in IE "RB mapping info" is 2, then this is present. Otherwise this IE is not needed.
UL-DCH/USCH	If IE "Uplink transport channel type" is equal to "DCH" or "USCH" (TDD only) this IE is MP. Otherwise the IE is not needed.
DL-DCH/DSCH	If IE "Downlink transport channel type" is equal to "DCH" or "DSCH" this IE is MP. Otherwise the IE is not needed.

NOTE 1: In DCH state a logical channel may be mapped onto DCH and DSCH simultaneously, therefore maximum 4 different multiplexing options are possible in that case. In all other states maximum one RB multiplexing option is possible.

11.3 Information element definitions

```
InformationElements DEFINITIONS AUTOMATIC TAGS ::=

-- ***************************************************
--
--     CORE NETWORK INFORMATION ELEMENTS (10.3.1)
--
-- ***************************************************

BEGIN

IMPORTS

    hiPDSCHidentities,
    hiPUSCHidentities,
    hiRM,
    maxAC,
    maxAdditionalMeas,
    maxASC,
    maxASCmap,
    maxASCpersist,
    maxCCTrCH,
    maxCellMeas,
    maxCellMeas-1,
    maxCNdomains,
    maxCPCHsets,
    maxDPCH-DLchan,
    maxDPCHcodesPerTS,
    maxDPDCH-UL,
    maxDRACclasses,
    maxFACH,
    maxFreq,
    maxFrequencybands,
    maxInterSysMessages,
    maxLoCHperRLC,
    maxMeasEvent,
    maxMeasIntervals,
    maxMeasParEvent,
    maxNumCDMA2000Freqs,
    maxNumFDDFreqs,
    maxNumGSMFreqRanges,
    maxNumTDDFreqs,
    maxOtherRAT,
    maxPage1,
    maxPCPCH-APsig,
    maxPCPCH-APsubCh,
    maxPCPCH-CDsig,
    maxPCPCH-CDsubCh,
    maxPCPCH-SF,
    maxPCPCHs,
    maxPDCPAlgoType,
    maxPDSCH,
    maxPDSCH-TFCIgroups,
    maxPRACH,
    maxPUSCH,
    maxRABsetup,
    maxRAT,
    maxRB,
    maxRBallRABs,
    maxRBMuxOptions,
    maxRBperRAB,
    maxReportedGSMCells,
    maxSRBsetup,
    maxRL,
    maxRL-1,
    maxSCCPCH,
    maxSat,
    maxSIB,
    maxSIB-FACH,
    maxSig,
    maxSubCh,
    maxSystemCapability,
    maxTF,
    maxTF-CPCH,
    maxTFC,
    maxTFCI-2-Combs,
    maxTGPS,
    maxTrCH,
    maxTS,
    maxTS-1,
```

```
    maxURA
FROM Constant-definitions;

CN-DomainIdentity ::=               ENUMERATED {
                                        cs-domain,
                                        ps-domain }

CN-DomainInformation ::=            SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    cn-DomainSpecificNAS-Info           NAS-SystemInformationGSM-MAP
}

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

IMEI ::=                            SEQUENCE (SIZE (15)) OF
                                        IMEI-Digit

IMEI-Digit ::=                      INTEGER (0..15)

IMSI-GSM-MAP ::=                    SEQUENCE (SIZE (6..15)) OF
                                        Digit
IntraDomainNasNodeSelector  ::=     BIT STRING (SIZE (16))

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-Synchronisation-Indicator   ::=     BIT STRING(SIZE(4))

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                       PLMN-Identity
    },
    ansi-41                         SEQUENCE {
        p-REV                           P-REV,
        min-P-REV                       Min-P-REV,
        sid                             SID,
        nid                             NID
```

```
	},
	gsm-MAP-and-ANSI-41				SEQUENCE {
		plmn-Identity					PLMN-Identity,
		p-REV							P-REV,
		min-P-REV						Min-P-REV,
		sid								SID,
		nid								NID
	}
}

RAB-Identity ::=					CHOICE {
	gsm-MAP-RAB-Identity				BIT STRING (SIZE (8)),
	ansi-41-RAB-Identity				BIT STRING (SIZE (8))
}

RAI ::=								SEQUENCE {
	lai									LAI,
	rac									RoutingAreaCode
}

RoutingAreaCode ::=					BIT STRING (SIZE (8))

TMSI-GSM-MAP ::=					BIT STRING (SIZE (32))

-- ***************************************************
--
--	UTRAN MOBILITY INFORMATION ELEMENTS (10.3.2)
--
-- ***************************************************

AccessClassBarred ::=				ENUMERATED {
										barred, notBarred }

AccessClassBarredList ::=			SEQUENCE (SIZE (maxAC)) OF
										AccessClassBarred

AllowedIndicator ::=				ENUMERATED {
										allowed, notAllowed }

CellAccessRestriction ::=			SEQUENCE {
	cellBarred							CellBarred,
	cellReservedForOperatorUse			ReservedIndicator,
	cellReservedForSOLSA				ReservedIndicator,
	accessClassBarredList				AccessClassBarredList				OPTIONAL
}

CellBarred ::=						CHOICE {
	barred								SEQUENCE {
		intraFreqCellReselectionInd			AllowedIndicator,
		t-Barred							T-Barred
	},
	notBarred							NULL
}

CellIdentity ::=					BIT STRING (SIZE (28))

CellSelectReselectInfoSIB-3-4 ::=	SEQUENCE {
	mappingInfo							MappingInfo							OPTIONAL,
	cellSelectQualityMeasure			CHOICE {
		cpich-Ec-No							SEQUENCE {
			q-HYST-2-S							Q-Hyst-S					OPTIONAL
			-- Default value for q-HYST-2-S is q-HYST-1-S
		},
		cpich-RSCP							NULL
	},
	modeSpecificInfo					CHOICE {
		fdd									SEQUENCE {
			s-Intrasearch						S-SearchQual				OPTIONAL,
			s-Intersearch						S-SearchQual				OPTIONAL,
			s-SearchHCS							S-SearchRXLEV				OPTIONAL,
			rat-List							RAT-FDD-InfoList			OPTIONAL,
			q-QualMin							Q-QualMin,
			q-RxlevMin							Q-RxlevMin
		},
		tdd									SEQUENCE {
			s-Intrasearch						S-SearchRXLEV				OPTIONAL,
			s-Intersearch						S-SearchRXLEV				OPTIONAL,
			s-SearchHCS							S-SearchRXLEV				OPTIONAL,
			rat-List							RAT-TDD-InfoList			OPTIONAL,
			q-RxlevMin							Q-RxlevMin
		}
	},
	q-Hyst-l-S							Q-Hyst-S,
```

```
    t-Reselection-S                    T-Reselection-S,
    hcs-ServingCellInformation         HCS-ServingCellInformation          OPTIONAL,
    maxAllowedUL-TX-Power              MaxAllowedUL-TX-Power
}

MapParameter ::=                   INTEGER (0..99)

Mapping ::=                        SEQUENCE {
    rat                                RAT,
    mappingFunctionParameterList       MappingFunctionParameterList
}

MappingFunctionParameter ::=       SEQUENCE {
    functionType                       MappingFunctionType,
    mapParameter1                      MapParameter                        OPTIONAL,
    mapParameter2                      MapParameter,
    upperLimit                         UpperLimit                          OPTIONAL
    -- The parameter is conditional on the number of repetition
}

MappingFunctionParameterList ::=   SEQUENCE (SIZE (1..maxMeasIntervals)) OF
                                       MappingFunctionParameter

MappingFunctionType ::=            ENUMERATED {
                                       linear,
                                       functionType2,
                                       functionType3,
                                       functionType4 }

MappingInfo ::=                    SEQUENCE (SIZE (1..maxRAT)) OF
                                       Mapping

-- Actual value = IE value * 2
Q-Hyst-S ::=                       INTEGER (0..20)

RAT ::=                            ENUMERATED {
                                       utra-FDD,
                                       utra-TDD,
                                       gsm,
                                       cdma2000 }

RAT-FDD-Info ::=                   SEQUENCE {
    rat-Identifier                     RAT-Identifier,
    s-SearchRAT                        S-SearchQual,
    s-HCS-RAT                          S-SearchRXLEV                           OPTIONAL,
    s-Limit-SearchRAT                  S-SearchQual
}

RAT-FDD-InfoList ::=               SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                       RAT-FDD-Info

RAT-Identifier ::=                 ENUMERATED {
                                       gsm, cdma2000 }

RAT-TDD-Info ::=                   SEQUENCE {
    rat-Identifier                     RAT-Identifier,
    s-SearchRAT                        S-SearchRXLEV,
    s-HCS-RAT                          S-SearchRXLEV                       OPTIONAL,
    s-Limit-SearchRAT                  S-SearchRXLEV
}

RAT-TDD-InfoList ::=               SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                       RAT-TDD-Info

ReservedIndicator ::=              ENUMERATED {
                                       reserved,
                                       notReserved }

-- Actual value = IE value * 2
S-SearchQual ::=                       INTEGER (-16..10)

-- Actual value = (IE value * 2) + 1
S-SearchRXLEV ::=                      INTEGER (-53..45)

T-Barred ::=                       ENUMERATED {
                                       s10, s20, s40, s80,
                                       s160, s320, s640, s1280 }

T-Reselection-S ::=                INTEGER (0..31)

-- The used range depends on the RAT used.
UpperLimit ::=                     INTEGER (1..91)
```

```
URA-Identity ::=                    BIT STRING (SIZE (16))

URA-IdentityList ::=                SEQUENCE (SIZE (1..maxURA)) OF
                                        URA-Identity

-- ***************************************************
--
--      USER EQUIPMENT INFORMATION ELEMENTS (10.3.3)
--
-- ***************************************************

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

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

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

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

CellUpdateCause ::=                 ENUMERATED {
                                        cellReselection,
                                        periodicalCellUpdate,
                                        uplinkDataTransmission,
                                        utran-pagingResponse,
                                        re-enteredServiceArea,
                                        radiolinkFailure,
                                        rlc-unrecoverableError,
                                        spare1 }

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

CipheringAlgorithm ::=              ENUMERATED {
                                        uea0, uea1 }

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

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

CN-DRX-CycleLengthCoefficient ::=   INTEGER (6..9)

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
}

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


CPCH-Parameters ::=                 SEQUENCE {
    initialPriorityDelayList            InitialPriorityDelayList            OPTIONAL,
```

```
    backoffControlParams                BackoffControlParams,
    powerControlAlgorithm               PowerControlAlgorithm,
    -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    dl-DPCCH-BER                        DL-DPCCH-BER
}

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

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

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

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

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

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

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

EstablishmentCause ::=              ENUMERATED {
                                        originatingConversationalCall,
                                        originatingStreamingCall,
                                        originatingInteractiveCall,
                                        originatingBackgroundCall,
                                        originatingSubscribedTrafficCall,
                                        terminatingConversationalCall,
                                        terminatingStreamingCall,
                                        terminatingInteractiveCall,
                                        terminatingBackgroundCall,
                                        emergencyCall,
                                        interRAT-CellReselection,
                                        interRAT-CellChangeOrder,
                                        registration,
                                        detach,
                                        highPrioritySignalling,
                                        lowPrioritySignalling,
                                        callRe-establishment,
                                        spare1 }

FailureCauseWithProtErr ::=         CHOICE {
    configurationUnsupported            NULL,
    physicalChannelFailure              NULL,
    incompatibleSimultaneousReconfiguration
                                        NULL,
    compressedModeRuntimeError          TGPSI,
    protocolError                       ProtocolErrorInformation,
    cellReselection                     NULL,
    invalidConfiguration                NULL,
    configurationIncomplete             NULL,
    unsupportedMeasurement              NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL,
    spare5                              NULL,
    spare6                              NULL,
    spare7                              NULL
```

```
}

FailureCauseWithProtErrTrId ::=     SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr
}

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


ICS-Version ::=                     ENUMERATED {
                                        r99 }

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

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

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

InitialUE-Identity ::=              CHOICE {
    imsi                                IMSI-GSM-MAP,
    tmsi-and-LAI                        TMSI-and-LAI-GSM-MAP,
    p-TMSI-and-RAI                      P-TMSI-and-RAI-GSM-MAP,
    imei                                IMEI,
    esn-DS-41                           ESN-DS-41,
    imsi-DS-41                          IMSI-DS-41,
    imsi-and-ESN-DS-41                  IMSI-and-ESN-DS-41,
    tmsi-DS-41                          TMSI-DS-41
}

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

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

IntegrityProtectionAlgorithm ::=    ENUMERATED {
                                        uia1 }


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

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))

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


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

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

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

```
MaxNoDPDCH-BitsTransmitted ::=      ENUMERATED {
                                        b600, b1200, b2400, b4800,
                                        b9600, b19200, b28800, b38400,
                                        b48000, b57600 }

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

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

MaxNoSCCPCH-RL ::=                  ENUMERATED {
                                        rl1 }

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

MaxNumberOfTFC-InTFCS-DL ::=        ENUMERATED {
                                        tfc16, tfc32, tfc48, tfc64, tfc96,
                                        tfc128, tfc256, tfc512, tfc1024 }

MaxNumberOfTFC-InTFCS-UL ::=        ENUMERATED {
                                        tfc4, tfc8, tfc16, tfc32, tfc48, tfc64,
                                        tfc96, tfc128, tfc256, tfc512, tfc1024 }

MaxPhysChPerFrame ::=               INTEGER (1..224)

MaxPhysChPerTimeslot ::=            ENUMERATED {
                                        ts1, ts2 }

MaxPhysChPerTS ::=                  INTEGER (1..16)

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

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

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

MaxTransportBlocksDL ::=            ENUMERATED {
                                        tb4, tb8, tb16, tb32, tb48,
                                        tb64, tb96, tb128, tb256, tb512 }

MaxTransportBlocksUL ::=            ENUMERATED {
                                        tb2, tb4, tb8, tb16, tb32, tb48,
                                        tb64, tb96, tb128, tb256, tb512 }

MaxTS-PerFrame ::=                  INTEGER (1..14)

-- 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 }

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

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

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

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

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

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

N-308 ::=                           INTEGER (1..8)

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

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

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

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

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

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

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

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

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

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

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

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

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

PagingCause ::=                     ENUMERATED {
                                        terminatingConversationalCall,
                                        terminatingStreamingCall,
                                        terminatingInteractiveCall,
                                        terminatingBackgroundCall,
                                        highPrioritySignalling,
                                        lowPrioritySignalling
 }

PagingRecord ::=                    CHOICE {
    cn-Identity                         SEQUENCE {
        pagingCause                         PagingCause,
        cn-DomainIdentity                   CN-DomainIdentity,
        cn-pagedUE-Identity                 CN-PagedUE-Identity
    },
    utran-Identity                      SEQUENCE {
        u-RNTI                              U-RNTI,
        cn-OriginatedPage-connectedMode-UE  SEQUENCE {
            pagingCause                         PagingCause,
            cn-DomainIdentity                   CN-DomainIdentity,
            pagingRecordTypeID                  PagingRecordTypeID
        }                                                                      OPTIONAL
    }
}

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

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

PhysicalChannelCapability ::=       SEQUENCE {
```

```
        fddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
        }                                           OPTIONAL,
        tddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }                                           OPTIONAL
}

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

ProtocolErrorIndicator ::=          ENUMERATED {
                                        noError, errorOccurred }

ProtocolErrorIndicatorWithMoreInfo ::=
                                    CHOICE {
    noError                             NULL,
    errorOccurred                       SEQUENCE {
        rrc-TransactionIdentifier           RRC-TransactionIdentifier,
        protocolErrorInformation            ProtocolErrorInformation
    }
}

ProtocolErrorMoreInformation ::=    SEQUENCE {
    diagnosticsType                     CHOICE {
        type1                               CHOICE {
            asn1-ViolationOrEncodingError       NULL,
            messageTypeNonexistent              NULL,
            messageNotCompatibleWithReceiverState
                                                IdentificationOfReveivedMessage,
            ie-ValueNotComprehended             IdentificationOfReveivedMessage,
            conditionalInformationElementError  IdentificationOfReveivedMessage,
            messageExtensionNotComprehended     IdentificationOfReveivedMessage,
            spare1                              NULL,
            spare2                              NULL
        },
        spare                               NULL
    }
}

RadioFrequencyBand ::=              ENUMERATED {
                                        a, b, c, ab, ac, bc, abc }

Rb-timer-indicator ::=              SEQUENCE {
    t314-expired                        BOOLEAN,
    t315-expired                        BOOLEAN }

Re-EstablishmentTimer ::=           ENUMERATED {
                                        useT314, useT315
}

RedirectionInfo ::=                 CHOICE {
    frequencyInfo                       FrequencyInfo,
    interRATInfo                        InterRATInfo
}

RejectionCause ::=                  ENUMERATED {
                                        congestion,
                                        unspecified }

ReleaseCause ::=                    ENUMERATED {
                                        normalEvent,
                                        unspecified,
                                        pre-emptiveRelease,
                                        congestion,
                                        re-establishmentReject,
                                    directedsignallingconnectionre-establishment,
                                        userInactivity }

RF-Capability ::=                   SEQUENCE {
        fddRF-Capability                SEQUENCE {
            ue-PowerClass                   UE-PowerClass,
            txRxFrequencySeparation         TxRxFrequencySeparation
        }                                   OPTIONAL,
        tddRF-Capability                            SEQUENCE {
```

```
            ue-PowerClass                 UE-PowerClass,
            radioFrequencyBandList        RadioFrequencyBand,
            chipRateCapability            ChipRateCapability
        }                                     OPTIONAL

}

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

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


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

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

RRC-TransactionIdentifier ::=         INTEGER (0..3)

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

S-RNTI-2 ::=                          BIT STRING (SIZE (10))

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

SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported                          NULL,
    supported                             SEQUENCE {
        maxNoSCCPCH-RL                        MaxNoSCCPCH-RL,
        simultaneousSCCPCH-DPCH-DPDCH-Reception
                                              BOOLEAN
        -- The IE above is applicable only if IE Support of PDSCH = TRUE
    }
}

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


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

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

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

SystemSpecificCapUpdateReq ::=        ENUMERATED {
                                          gsm }

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


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

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

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

T-304 ::=                             ENUMERATED {
                                          ms100, ms200, ms400,
```

```
                                    ms1000, ms2000 }

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

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

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

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

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

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

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

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

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

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

T-316 ::=                           ENUMERATED {
                                        s0, s10, s20, s30, s40,
                                        s50, s-inf }

T-317 ::=                           ENUMERATED {
                                        s0, s10, s30, s60, s180,
                                        s600, s1200, s1800 }

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 }

-- 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 }

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

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

```
UE-ConnTimersAndConstants ::=       SEQUENCE {
-- Optional is used also for parameters for which the default value is the last one read in SIB1
    t-301                               T-301                               DEFAULT ms2000,
    n-301                               N-301                               DEFAULT 2,
    t-302                               T-302                               DEFAULT ms4000,
    n-302                               N-302                               DEFAULT 3,
    t-304                               T-304                               OPTIONAL,
    n-304                               N-304                               OPTIONAL,
    t-305                               T-305                               DEFAULT m30,
    t-307                               T-307                               DEFAULT s30,
    t-308                               T-308                               OPTIONAL,
    t-309                               T-309                               OPTIONAL,
    t-310                               T-310                               DEFAULT ms160,
    n-310                               N-310                               DEFAULT 4,
    t-311                               T-311                               DEFAULT ms2000,
    t-312                               T-312                               DEFAULT 1,
    n-312                               N-312                               DEFAULT s1,
    t-313                               T-313                               OPTIONAL,
    n-313                               N-313                               OPTIONAL,
    t-314                               T-314                               OPTIONAL,
    t-315                               T-315                               OPTIONAL,
    n-315                               N-315                               OPTIONAL,
    t-316                               T-316                               OPTIONAL,
    t-317                               T-317                               OPTIONAL
}

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

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

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

UE-RadioAccessCapability ::=        SEQUENCE {
    ics-Version                         ICS-Version,
    pdcp-Capability                     PDCP-Capability,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability,
    physicalChannelCapability           PhysicalChannelCapability,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    up-Capability                       UP-Capability,
    measurementCapability               MeasurementCapability       OPTIONAL
}

UL-PhysChCapabilityFDD ::=          SEQUENCE {
    maxNoDPDCH-BitsTransmitted          MaxNoDPDCH-BitsTransmitted,
    supportOfPCPCH                      BOOLEAN
}

UL-PhysChCapabilityTDD ::=          SEQUENCE {
    maxTS-PerFrame                      MaxTS-PerFrame,
    maxPhysChPerTimeslot                MaxPhysChPerTimeslot,
    minimumSF                           MinimumSF-UL,
    supportOfPUSCH                      BOOLEAN
}

UL-TransChCapability ::=            SEQUENCE {
    maxNoBitsTransmitted                MaxNoBits,
    maxConvCodeBitsTransmitted          MaxNoBits,
    turboDecodingSupport                TurboSupport,
    maxSimultaneousTransChs             MaxSimultaneousTransChsUL,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            maxSimultaneousCCTrCH-Count         MaxSimultaneousCCTrCH-Count
        }
    },
    maxTransmittedBlocks                MaxTransportBlocksUL,
    maxNumberOfTFC-InTFCS               MaxNumberOfTFC-InTFCS-UL,
    maxNumberOfTF                       MaxNumberOfTF
}

UP-Capability ::=                   SEQUENCE {
```

```
    standaloneLocMethodsSupported       BOOLEAN,
    ue-BasedOTDOA-Supported             BOOLEAN,
    networkAssistedGPS-Supported        NetworkAssistedGPS-Supported,
    gps-ReferenceTimeCapable            BOOLEAN,
    supportForIDL                       BOOLEAN
}

URA-UpdateCause ::=                 ENUMERATED {
                                        changeOfURA,
                                        periodicURAUpdate,
                                        re-enteredServiceArea,
                                        spare1 }

UTRAN-DRX-CycleLengthCoefficient ::= INTEGER (3..9)

WaitTime ::=                        INTEGER (0..15)

-- ***************************************************
--
--      RADIO BEARER INFORMATION ELEMENTS (10.3.4)
--
-- ***************************************************

AlgorithmSpecificInfo ::=           CHOICE {
    rfc2507-Info                        RFC2507-Info
}

-- Upper limit is 2^32 - 1
COUNT-C ::=                         INTEGER (0..4294967295)

-- Upper limit is 2^25 - 1
COUNT-C-MSB ::=                     INTEGER (0..33554431)

DL-AM-RLC-Mode ::=                  SEQUENCE {
    inSequenceDelivery                  BOOLEAN,
    receivingWindowSize                 ReceivingWindowSize,
    dl-RLC-StatusInfo                   DL-RLC-StatusInfo
}

DL-LogicalChannelMapping ::=        SEQUENCE {
    -- TABULAR: DL-TransportChannelType contains TransportChannelIdentity as well.
    dl-TransportChannelType             DL-TransportChannelType,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL
}

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

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

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

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

DL-TransportChannelType ::=         CHOICE {
    dch                                 TransportChannelIdentity,
    fach                                NULL,
    dsch                                TransportChannelIdentity
}

ExpectReordering ::=                ENUMERATED {
                                        reorderingNotExpected,
                                        reorderingExpected }

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

HeaderCompressionInfo ::=           SEQUENCE {
    algorithmSpecificInfo               AlgorithmSpecificInfo
```

```
}

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


LogicalChannelIdentity ::=          INTEGER (1..15)

LosslessSRNS-RelocSupport ::=       CHOICE {
    supported                           MaxPDCP-SN-WindowSize,
    notSupported                        NULL
}

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

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

MaxDAT-Retransmissions ::=          SEQUENCE {
    maxDAT                              MaxDAT,
    timerMRW                            TimerMRW,
    maxMRW                              MaxMRW
}

MaxMRW ::=                          ENUMERATED {
                                        mm1, mm4, mm6, mm8, mm12, mm16,
                                        mm24, mm32 }

MaxPDCP-SN-WindowSize ::=           ENUMERATED {
                                        sn255, sn65535 }

MaxRST ::=                          ENUMERATED {
                                        rst1, rst4, rst6, rst8, rst12,
                                        rst16, rst24, rst32 }

NoExplicitDiscard ::=               ENUMERATED {
                                        dt10, dt20, dt30, dt40, dt50,
                                        dt60, dt70, dt80, dt90, dt100 }

PDCP-Info ::=                       SEQUENCE {
    losslessSRNS-RelocSupport           LosslessSRNS-RelocSupport           OPTIONAL,
    pdcp-PDU-Header                     PDCP-PDU-Header,
    -- TABULAR: The IE above is MD in the tabular format and it can be encoded
    -- in one bit, so the OPTIONAL is removed for compactness.
    headerCompressionInfoList           HeaderCompressionInfoList           OPTIONAL
}

PDCP-InfoReconfig ::=               SEQUENCE {
    pdcp-Info                           PDCP-Info,
    pdcp-SN-Info                        PDCP-SN-Info
}

PDCP-PDU-Header ::=                 ENUMERATED {
                                        present, absent }

PDCP-SN-Info ::=                    INTEGER (0..65535)

Poll-PU ::=                         ENUMERATED {
                                        pu1, pu2, pu4, pu8, pu16,
                                        pu32, pu64, pu128 }

Poll-SDU ::=                        ENUMERATED {
                                        sdu1, sdu4, sdu16, sdu64 }

PollingInfo ::=                     SEQUENCE {
    timerPollProhibit                   TimerPollProhibit                   OPTIONAL,
    timerPoll                           TimerPoll                           OPTIONAL,
    poll-PU                             Poll-PU                             OPTIONAL,
    poll-SDU                            Poll-SDU                            OPTIONAL,
    lastTransmissionPU-Poll             BOOLEAN,
    lastRetransmissionPU-Poll           BOOLEAN,
    pollWindow                          PollWindow                          OPTIONAL,
    timerPollPeriodic                   TimerPollPeriodic                   OPTIONAL
}

PollWindow ::=                      ENUMERATED {
                                        pw50, pw60, pw70, pw80, pw85,
                                        pw90, pw95, pw99 }

PredefinedConfigIdentity ::=        INTEGER (0..15)
```

```
PredefinedConfigValueTag ::=        INTEGER (0..15)

PredefinedRB-Configuration ::=      SEQUENCE {
    srb-InformationList                 SRB-InformationSetupList,
    rb-InformationList                  RB-InformationSetupList
}

PreDefRadioConfiguration ::=        SEQUENCE {
    -- User equipment IEs
    re-EstablishmentTimer               Re-EstablishmentTimer,
    -- Radio bearer IEs
    predefinedRB-Configuration          PredefinedRB-Configuration,
    -- Transport channel IEs
    preDefTransChConfiguration          PreDefTransChConfiguration,
    -- Physical channel IEs
    preDefPhyChConfiguration            PreDefPhyChConfiguration
}

RAB-Info ::=                        SEQUENCE {
    rab-Identity                        RAB-Identity,
    cn-DomainIdentity                   CN-DomainIdentity,
    nas-Synchronisation-Indicator       NAS-Synchronisation-Indicator   OPTIONAL,
    re-EstablishmentTimer               Re-EstablishmentTimer
}
RAB-InformationList         ::=     SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-Info

RAB-InformationReconfigList ::=     SEQUENCE (SIZE (1.. maxRABsetup)) OF
                                        RAB-InformationReconfig

RAB-InformationReconfig ::=         SEQUENCE {
    rab-Identity                        RAB-Identity,
    cn-DomainIdentity                   CN-DomainIdentity,
    nas-Synchronisation-Indicator       NAS-Synchronisation-Indicator
}

RAB-Info-Post ::=                       SEQUENCE {
    rab-Identity                        RAB-Identity,
    cn-DomainIdentity                   CN-DomainIdentity,
    nas-Synchronisation-Indicator       NAS-Synchronisation-Indicator   OPTIONAL
}

RAB-InformationSetup ::=            SEQUENCE {
    rab-Info                            RAB-Info,
    rb-InformationSetupList             RB-InformationSetupList
}

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

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

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

RB-COUNT-C-Information ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    count-C-UL                          COUNT-C,
    count-C-DL                          COUNT-C
}

RB-COUNT-C-InformationList ::=      SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                        RB-COUNT-C-Information

RB-COUNT-C-MSB-Information ::=      SEQUENCE {
    rb-Identity                         RB-Identity,
    count-C-MSB-UL                      COUNT-C-MSB,
    count-C-MSB-DL                      COUNT-C-MSB
}

RB-COUNT-C-MSB-InformationList ::=  SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                        RB-COUNT-C-MSB-Information

RB-Identity ::=                     INTEGER (1..32)

RB-IdentityList ::=                 SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-Identity

RB-InformationAffected ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
```

```
    rb-MappingInfo                      RB-MappingInfo
}

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

RB-InformationReconfig ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig                   OPTIONAL,
    rlc-Info                            RLC-Info                            OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo                      OPTIONAL,
    rb-StopContinue                     RB-StopContinue                 OPTIONAL
}

RB-InformationReconfigList ::=      SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationReconfig

RB-InformationReleaseList ::=       SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-Identity

RB-InformationSetup ::=             SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info                           OPTIONAL,
    rlc-Info                            RLC-Info,
    rb-MappingInfo                      RB-MappingInfo
}

RB-InformationSetupList ::=         SEQUENCE (SIZE (1..maxRBperRAB)) OF
                                        RB-InformationSetup

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

RB-MappingOption ::=                SEQUENCE {
    ul-LogicalChannelMappings           UL-LogicalChannelMappings           OPTIONAL,
    dl-LogicalChannelMappingList        DL-LogicalChannelMappingList        OPTIONAL
}

RB-StopContinue ::=                 ENUMERATED {
                                        stopRB, continueRB }

RB-WithPDCP-Info ::=                SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-SN-Info                        PDCP-SN-Info
}

RB-WithPDCP-InfoList ::=            SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                        RB-WithPDCP-Info

ReceivingWindowSize ::=             ENUMERATED {
                                        rw1, rw8, rw16, rw32, rw64, rw128, rw256,
                                        rw512, rw768, rw1024, rw1536, rw2047,
                                        rw2560, rw3072, rw3584, rw4095 }

RFC2507-Info ::=                    SEQUENCE {
    f-MAX-PERIOD                        INTEGER (1..65535)                  DEFAULT 256,
    f-MAX-TIME                          INTEGER (1..255)                    DEFAULT 5,
    max-HEADER                          INTEGER (60..65535)                 DEFAULT 168,
    tcp-SPACE                           INTEGER (3..255)                    DEFAULT 15,
    non-TCP-SPACE                       INTEGER (3..65535)                  DEFAULT 15,
    expectReordering                    ExpectReordering
    -- TABULAR: The IE above has only two possible values, so using Optional or Default
    -- would be wasteful
}

RLC-Info ::=                        SEQUENCE {
    ul-RLC-Mode                         UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode                         DL-RLC-Mode                         OPTIONAL
}

RLC-SequenceNumber ::=              INTEGER (0..4095)

RLC-SizeInfo    ::=                 SEQUENCE {
    rlc-SizeIndex                       INTEGER (1..maxTF)
}

RLC-SizeExplicitList    ::=         SEQUENCE (SIZE  (1..maxTF)) OF
                                        RLC-SizeInfo

SRB-InformationSetup ::=            SEQUENCE {
    rb-Identity                         RB-Identity                         OPTIONAL,
    -- The default value for the IE above is the smallest value not used yet.
    rlc-Info                            RLC-Info,
```

```
    rb-MappingInfo                      RB-MappingInfo
}

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

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

TimerDiscard ::=                    ENUMERATED {
                                        td0-1, td0-25, td0-5, td0-75,
                                        td1, td1-25, td1-5, td1-75,
                                        td2, td2-5, td3, td3-5, td4,
                                        td4-5, td5, td7-5 }

TimerEPC ::=                        ENUMERATED {
                                        te50, te60, te70, te80, te90,
                                        te100, te120, te140, te160, te180,
                                        te200, te300, te400, te500, te700,
                                        te900 }

TimerMRW ::=                        ENUMERATED {
                                        te50, te60, te70, te80, te90, te100,
                                        te120, te140, te160, te180, te200,
                                        te300, te400, te500, te700, te900 }

TimerPoll ::=                       ENUMERATED {
                                        tp10, tp20, tp30, tp40, tp50,
                                        tp60, tp70, tp80, tp90, tp100,
                                        tp110, tp120, tp130, tp140, tp150,
                                        tp160, tp170, tp180, tp190, tp200,
                                        tp210, tp220, tp230, tp240, tp250,
                                        tp260, tp270, tp280, tp290, tp300,
                                        tp310, tp320, tp330, tp340, tp350,
                                        tp360, tp370, tp380, tp390, tp400,
                                        tp410, tp420, tp430, tp440, tp450,
                                        tp460, tp470, tp480, tp490, tp500,
                                        tp510, tp520, tp530, tp540, tp550,
                                        tp600, tp650, tp700, tp750, tp800,
                                        tp850, tp900, tp950, tp1000 }

TimerPollPeriodic ::=               ENUMERATED {
                                        tper100, tper200, tper300, tper400,
                                        tper500, tper750, tper1000, tper2000 }

TimerPollProhibit ::=               ENUMERATED {
                                        tpp10, tpp20, tpp30, tpp40, tpp50,
                                        tpp60, tpp70, tpp80, tpp90, tpp100,
                                        tpp110, tpp120, tpp130, tpp140, tpp150,
                                        tpp160, tpp170, tpp180, tpp190, tpp200,
                                        tpp210, tpp220, tpp230, tpp240, tpp250,
                                        tpp260, tpp270, tpp280, tpp290, tpp300,
                                        tpp310, tpp320, tpp330, tpp340, tpp350,
                                        tpp360, tpp370, tpp380, tpp390, tpp400,
                                        tpp410, tpp420, tpp430, tpp440, tpp450,
                                        tpp460, tpp470, tpp480, tpp490, tpp500,
                                        tpp510, tpp520, tpp530, tpp540, tpp550,
                                        tpp600, tpp650, tpp700, tpp750, tpp800,
                                        tpp850, tpp900, tpp950, tpp1000 }

TimerRST ::=                        ENUMERATED {
                                        tr50, tr100, tr150, tr200, tr250, tr300,
                                        tr350, tr400, tr450, tr500, tr550,
                                        tr600, tr700, tr800, tr900, tr1000 }

TimerStatusPeriodic ::=             ENUMERATED {
                                        tsp100, tsp200, tsp300, tsp400, tsp500,
                                        tsp750, tsp1000, tsp2000 }

TimerStatusProhibit ::=             ENUMERATED {
                                        tsp10,tsp20,tsp30,tsp40,tsp50,
                                        tsp60,tsp70,tsp80,tsp90,tsp100,
                                        tsp110,tsp120,tsp130,tsp140,tsp150,
                                        tsp160,tsp170,tsp180,tsp190,tsp200,
                                        tsp210,tsp220,tsp230,tsp240,tsp250,
                                        tsp260,tsp270,tsp280,tsp290,tsp300,
                                        tsp310,tsp320,tsp330,tsp340,tsp350,
                                        tsp360,tsp370,tsp380,tsp390,tsp400,
                                        tsp410,tsp420,tsp430,tsp440,tsp450,
                                        tsp460,tsp470,tsp480,tsp490,tsp500,
                                        tsp510,tsp520,tsp530,tsp540,tsp550,
                                        tsp600,tsp650,tsp700,tsp750,tsp800,
                                        tsp850,tsp900,tsp950,tsp1000 }
```

```
TransmissionRLC-Discard ::=         CHOICE {
    timerBasedExplicit                  ExplicitDiscard,
    timerBasedNoExplicit                NoExplicitDiscard,
    maxDAT-Retransmissions              MaxDAT-Retransmissions,
    noDiscard                           MaxDAT
}

TransmissionWindowSize ::=          ENUMERATED {
                                        tw1, tw8, tw16, tw32, tw64, tw128, tw256,
                                        tw512, tw768, tw1024, tw1536, tw2047,
                                        tw2560, tw3072, tw3584, tw4095 }

UL-AM-RLC-Mode ::=                  SEQUENCE {
    transmissionRLC-Discard             TransmissionRLC-Discard,
    transmissionWindowSize              TransmissionWindowSize,
    timerRST                            TimerRST,
    max-RST                             MaxRST,
    pollingInfo                         PollingInfo
}

UL-LogicalChannelMapping ::=        SEQUENCE {
    -- TABULAR: UL-TransportChannelType contains TransportChannelIdentity as well.
    ul-TransportChannelType             UL-TransportChannelType,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL,
    rlc-SizeList                        CHOICE {
        allSizes                            NULL,
        configured                          NULL,
        explicitList                        RLC-SizeExplicitList
    },
    mac-LogicalChannelPriority          MAC-LogicalChannelPriority
}

UL-LogicalChannelMappingList ::=    SEQUENCE {
    rlc-LogicalChannelMappingIndicator  BOOLEAN,    -- NOTE: This parameter shall be set to TRUE in
R99this release
    ul-LogicalChannelMapping            SEQUENCE (SIZE (maxLoCHperRLC)) OF
                                        UL-LogicalChannelMapping
}

UL-LogicalChannelMappings ::=       CHOICE {
    oneLogicalChannel                   UL-LogicalChannelMapping,
    twoLogicalChannels                  UL-LogicalChannelMappingList
}

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

UL-TM-RLC-Mode ::=                  SEQUENCE {
    transmissionRLC-Discard             TransmissionRLC-Discard             OPTIONAL,
    segmentationIndication              BOOLEAN
}

UL-UM-RLC-Mode ::=                  SEQUENCE {
    transmissionRLC-Discard             TransmissionRLC-Discard             OPTIONAL

}

UL-TransportChannelType ::=         CHOICE {
    dch                                 TransportChannelIdentity,
    rach                                NULL,
    cpch                                NULL,
    usch                                NULL
}

-- ***************************************************
--
--     TRANSPORT CHANNEL INFORMATION ELEMENTS (10.3.5)
--
-- ***************************************************

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

AllowedTFI-List ::=                 SEQUENCE (SIZE (1..maxTF)) OF
                                        INTEGER (0..31)

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
    }
}
-- Actual value = IE value * 0.1
BLER-QualityValue ::=               INTEGER (-63..0)

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

CodingRate ::=                      ENUMERATED {
                                        half,
                                        third }

CommonDynamicTF-Info ::=            SEQUENCE {
    rlc-Size                            CHOICE {
        fdd                                 SEQUENCE {
            octetModeRLC-SizeInfoType2          OctetModeRLC-SizeInfoType2
        },
        tdd                                 SEQUENCE {
            commonTDD-Choice                    CHOICE {
                bitModeRLC-SizeInfo                 BitModeRLC-SizeInfo,
                octetModeRLC-SizeInfoType1          OctetModeRLC-SizeInfoType1
            }
        }
    },
    numberOfTbSizeList              SEQUENCE (SIZE (1..maxTF)) OF
                                            NumberOfTransportBlocks,
    logicalChannelList              LogicalChannelList
}

CommonDynamicTF-Info-DynamicTTI ::= SEQUENCE {
    commonTDD-Choice                    CHOICE {
        bitModeRLC-SizeInfo                 BitModeRLC-SizeInfo,
        octetModeRLC-SizeInfoType1          OctetModeRLC-SizeInfoType1
    },
    numberOfTbSizeAndTTIList            NumberOfTbSizeAndTTIList,
    logicalChannelList                  LogicalChannelList
}

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

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

CommonTransChTFS ::=                SEQUENCE {
    tti                                 CHOICE {
        tti10                               CommonDynamicTF-InfoList,
        tti20                               CommonDynamicTF-InfoList,
        tti40                               CommonDynamicTF-InfoList,
        tti80                               CommonDynamicTF-InfoList,
        dynamic                             CommonDynamicTF-InfoList-DynamicTTI
    },
    semistaticTF-Information            SemistaticTF-Information
}

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

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

DedicatedDynamicTF-Info ::=         SEQUENCE {
    rlc-Size                            CHOICE {
        bitMode                             BitModeRLC-SizeInfo,
        octetModeType1                      OctetModeRLC-SizeInfoType1
    },
```

```
    numberOfTbSizeList              SEQUENCE (SIZE (1..maxTF)) OF
    NumberOfTransportBlocks,
    logicalChannelList              LogicalChannelList
}

DedicatedDynamicTF-Info-DynamicTTI ::= SEQUENCE {
    rlc-Size                            CHOICE {
        bitMode                             BitModeRLC-SizeInfo,
        octetModeType1                      OctetModeRLC-SizeInfoType1
    },
    numberOfTbSizeAndTTIList            NumberOfTbSizeAndTTIList,
    logicalChannelList              LogicalChannelList
}

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

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

DedicatedTransChTFS ::=             SEQUENCE {
    tti                                 CHOICE {
        tti10                               DedicatedDynamicTF-InfoList,
        tti20                               DedicatedDynamicTF-InfoList,
        tti40                               DedicatedDynamicTF-InfoList,
        tti80                               DedicatedDynamicTF-InfoList,
        dynamic                             DedicatedDynamicTF-InfoList-DynamicTTI
    },
    semistaticTF-Information            SemistaticTF-Information
}

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

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

-- ASN.1 for IE "Added or Reconfigured DL TrCH information"
-- in case of messages other than: Radio Bearer Release message and
-- Radio Bearer Reconfiguration message
DL-AddReconfTransChInformation ::=  SEQUENCE {
    dl-transportChannelIdentity         TransportChannelIdentity,
    tfs-SignallingMode                  CHOICE {
        explicit                            TransportFormatSet,
        sameAsULTrCH                        TransportChannelIdentity
    },
    dch-QualityTarget                   QualityTarget                       OPTIONAL,
    tm-SignallingInfo                   TM-SignallingInfo                   OPTIONAL
}

-- ASN.1 for IE "Added or Reconfigured DL TrCH information"
-- in case of Radio Bearer Release message and
-- Radio Bearer Reconfiguration message
DL-AddReconfTransChInformation2 ::= SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    tfs-SignallingMode                  CHOICE {
        explicit                            TransportFormatSet,
        sameAsULTrCH                        TransportChannelIdentity
    },
    qualityTarget                       QualityTarget                       OPTIONAL
}

DL-CommonTransChInfo ::=            SEQUENCE {
    sccpch-TFCS                         TFCS                                OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            tfcs-SignallingMode                 CHOICE {
                explicit                            TFCS,
                sameAsUL                            NULL
            }                                                               OPTIONAL
        },
        tdd                                 SEQUENCE {
            individualDL-CCTrCH-InfoList        IndividualDL-CCTrCH-InfoList
                                                                            OPTIONAL
        }
    }
}

DL-DeletedTransChInfoList ::=       SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

DRAC-ClassIdentity ::=              INTEGER (1..maxDRACclasses)
```

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

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

ExplicitTFCS-Configuration ::=      CHOICE {
    complete                            TFCS-ReconfAdd,
    addition                            TFCS-ReconfAdd,
    removal                             TFCS-RemovalList,
    replacement                         SEQUENCE {
        tfcsRemoval                         TFCS-RemovalList,
        tfcsAdd                             TFCS-ReconfAdd
    }
}

GainFactor ::=                      INTEGER (0..15)

GainFactorInformation ::=           CHOICE {
    signalledGainFactors                SignalledGainFactors,
    computedGainFactors                 ReferenceTFC-ID
}

IndividualDL-CCTrCH-Info ::=        SEQUENCE {
    dl-TFCS-Identity                    TFCS-Identity,
    tfcs-SignallingMode                 CHOICE {
        explicit                            TFCS,
        sameAsUL                            TFCS-Identity
    }
}

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

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

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

LogicalChannelByRB          ::=     SEQUENCE {
    rb-Identity                         RB-Identity,
    logChOfRb                           INTEGER (0..1)                      OPTIONAL
}

LogicalChannelList  ::=             CHOICE {
        allSizes                            NULL,
        configured                          NULL,
        explicitList                        SEQUENCE (SIZE (1..15)) OF
                                                LogicalChannelByRB
}

NumberOfTbSizeAndTTIList    ::=     SEQUENCE (SIZE (1..maxTF)) OF SEQUENCE {
        numberOfTransportBlocks             NumberOfTransportBlocks,
        transmissionTimeInterval            TransmissionTimeInterval
}

MessType ::=                        ENUMERATED {
                                        transportFormatCombinationControl }

Non-allowedTFC-List ::=             SEQUENCE (SIZE (1..maxTFC)) OF
                                        TFC-Value

NumberOfTransportBlocks::=          CHOICE {
    zero                                NULL,
    one                                 NULL,
    small                               INTEGER (2..17),
    large                               INTEGER (18..512)
}

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 ::=      CHOICE {
    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               GainFactorInformation,
    -- PowerOffsetPp-m is always absent in TDD
    powerOffsetPp-m                     PowerOffsetPp-m                     OPTIONAL
}

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

PreDefTransChConfiguration ::=      SEQUENCE {
    ul-CommonTransChInfo                UL-CommonTransChInfo,
    ul-AddReconfTrChInfoList            UL-AddReconfTransChInfoList,
    dl-CommonTransChInfo                DL-CommonTransChInfo,
    dl-TrChInfoList                     DL-AddReconfTransChInfoList
}

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

RateMatchingAttribute ::=           INTEGER (1..hiRM)


ReferenceTFC-ID ::=                 INTEGER (0..3)

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

RestrictedTrChInfoList ::=          SEQUENCE (SIZE (1..maxTrCH)) OF
                                        RestrictedTrChInfo

SemistaticTF-Information ::=        SEQUENCE {
    -- TABULAR: Transmission time interval has been included in the IE CommonTransChTFS.
    channelCodingType                   ChannelCodingType,
    rateMatchingAttribute               RateMatchingAttribute,
    crc-Size                            CRC-Size
}

SignalledGainFactors ::=            SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            gainFactorBetaC                     GainFactor
        },
        tdd                                 NULL
    },
    gainFactorBetaD                     GainFactor,
    referenceTFC-ID                     ReferenceTFC-ID                     OPTIONAL
}

SplitTFCI-Signalling ::=            SEQUENCE {
    splitType                           SplitType                       OPTIONAL,
    tfci-Field2-Length                  INTEGER (1..10)                 OPTIONAL,
    tfci-Field1-Information             ExplicitTFCS-Configuration      OPTIONAL,
    tfci-Field2-Information             TFCI-Field2-Information         OPTIONAL
}

SplitType ::=                       ENUMERATED {
                                        hardSplit, logicalSplit }

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

```
TFC-Value ::=                   INTEGER (0..1023)

TFCI-Field2-Information ::=     CHOICE {
    tfci-Range                      TFCI-RangeList,
    explicit                        ExplicitTFCS-Configuration
}

TFCI-Range ::=                  SEQUENCE {
    maxTFCIField2Value              INTEGER (1..1023),
    tfcs-InfoForDSCH                TFCS-InfoForDSCH
}

TFCI-RangeList ::=              SEQUENCE (SIZE (1..maxPDSCH-TFCIgroups)) OF
                                    TFCI-Range

TFCS ::=                        CHOICE {
    normalTFCI-Signalling           ExplicitTFCS-Configuration,
    splitTFCI-Signalling            SplitTFCI-Signalling
}

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

TFCS-IdentityPlain ::=          INTEGER (1..8)

TFCS-InfoForDSCH ::=            CHOICE {
    ctfc2bit                        INTEGER (0..3),
    ctfc4bit                        INTEGER (0..15),
    ctfc6bit                        INTEGER (0..63),
    ctfc8bit                        INTEGER (0..255),
    ctfc12bit                       INTEGER (0..4095),
    ctfc16bit                       INTEGER (0..65535),
    ctfc24bit                       INTEGER (0..16777215)
}

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

TFCS-Removal ::=                SEQUENCE {
    tfci                            INTEGER (0..1023)
}

TFCS-RemovalList ::=            SEQUENCE (SIZE (1..maxTFC)) OF
                                    TFCS-Removal

TimeDurationBeforeRetry ::=     INTEGER (1..256)

TM-SignallingInfo   ::=         SEQUENCE {
    messType                        MessType,
    tm-SignallingMode               CHOICE {
```

```
        mode1                           NULL,
        mode2                           SEQUENCE {
            ul-controlledTrChList           UL-ControlledTrChList
        }
    }
}

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

TransmissionTimeValidity ::=        INTEGER (1..256)

TransportChannelIdentity ::=        INTEGER (1..32)

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

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

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

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

            individualUL-CCTrCH-InfoList        IndividualUL-CCTrCH-InfoList
                                                                            OPTIONAL,
            ul-TFCS                             TFCS
        }
    }                                                                       OPTIONAL
}

UL-ControlledTrChList ::=           SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

UL-DeletedTransChInfoList ::=       SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

-- ***************************************************
--
--     PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- ***************************************************

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

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

AccessServiceClass ::=              SEQUENCE {
    availableSignatureStartIndex        INTEGER (0..15),
    availableSignatureEndIndex          INTEGER (0..15),

    assignedSubChannelNumber            BIT STRING (SIZE(4))
}

AccessServiceClassIndex ::=         INTEGER (1..8)

AICH-Info ::=                       SEQUENCE {
    channelisationCode256               ChannelisationCode256,
    sttd-Indicator                      BOOLEAN,
    aich-TransmissionTiming             AICH-TransmissionTiming
}

AICH-PowerOffset ::=                INTEGER (-22..5)

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

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

```
}
Alpha ::=                           INTEGER (0..8)

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

AP-PreambleScramblingCode ::=       INTEGER (0..79)

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

AP-Signature-VCAM ::=               SEQUENCE {
    ap-Signature                        AP-Signature,
    availableAP-SubchannelList          AvailableAP-SubchannelList OPTIONAL
}

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

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

ASC-RepetitionPeriodAndOffset ::=   CHOICE {
    rp1                                 NULL,
    rp2                                 INTEGER (0..1),
    rp4                                 INTEGER (0..3),
    rp8                                 INTEGER (0..7)
}

ASCSetting ::=                      SEQUENCE {
    -- TABULAR: This is MD in tabular description
    -- Default value is previous ASC
    -- If this is the first ASC, the default value is all available signature and sub-channels
    accessServiceClass                      AccessServiceClass      OPTIONAL
}

AvailableAP-Signature-VCAMList ::=  SEQUENCE (SIZE (1..maxPCPCH-APsig)) OF
                                        AP-Signature-VCAM

AvailableAP-SignatureList ::=       SEQUENCE (SIZE (1..maxPCPCH-APsig)) OF
                                        AP-Signature

AvailableAP-SubchannelList ::=      SEQUENCE (SIZE (1..maxPCPCH-APsubCh)) OF
                                        AP-Subchannel

AvailableMinimumSF-ListVCAM ::=     SEQUENCE (SIZE (1..maxPCPCH-SF)) OF
                                        AvailableMinimumSF-VCAM

AvailableMinimumSF-VCAM ::=         SEQUENCE {
    minimumSpreadingFactor              MinimumSpreadingFactor,
    nf-Max                              NF-Max,
    maxAvailablePCPCH-Number            MaxAvailablePCPCH-Number,
    availableAP-Signature-VCAMList      AvailableAP-Signature-VCAMList
}

AvailableSignatures ::=         BIT STRING(SIZE(16))

AvailableSubChannelNumbers ::=      BIT STRING(SIZE(12))

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..maxPCPCH-CDsubCh)) OF
                                        CD-AccessSlotSubchannel

CD-CA-ICH-ChannelisationCode ::=    INTEGER (0..255)

CD-PreambleScramblingCode ::=       INTEGER (0..79)

CD-SignatureCode ::=                INTEGER (0..15)

CD-SignatureCodeList ::=            SEQUENCE (SIZE (1..maxPCPCH-CDsig)) OF
```

```
                                    CD-SignatureCode

CellParametersID ::=            INTEGER (0..127)

Cfntargetsfnframeoffset ::=         INTEGER(0..255)

ChannelAssignmentActive ::=     CHOICE {
    notActive                       NULL,
    isActive                        AvailableMinimumSF-ListVCAM
}

ChannelisationCode256 ::=       INTEGER (0..255)

ChannelReqParamsForUCSM ::=     SEQUENCE {
    availableAP-SignatureList       AvailableAP-SignatureList,
    availableAP-SubchannelList      AvailableAP-SubchannelList          OPTIONAL
}

ClosedLoopTimingAdjMode ::=     ENUMERATED {
                                    slot1, slot2 }

CodeNumberDSCH ::=              INTEGER (0..255)

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

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

CommonTimeslotInfo ::=          SEQUENCE {
    -- TABULAR: The IE below is MD, but since it can be encoded in a single
    -- bit it is not defined as OPTIONAL.
    secondInterleavingMode          SecondInterleavingMode,
    tfci-Coding                     TFCI-Coding                         OPTIONAL,
    puncturingLimit                 PuncturingLimit,
    repetitionPeriodAndLength       RepetitionPeriodAndLength           OPTIONAL
}

CommonTimeslotInfoSCCPCH ::=    SEQUENCE {
    -- TABULAR: The IE below is MD, but since it can be encoded in a single
    -- bit it is not defined as OPTIONAL.
    secondInterleavingMode          SecondInterleavingMode,
    tfci-Coding                     TFCI-Coding                         OPTIONAL,
    puncturingLimit                 PuncturingLimit,
    repetitionPeriodLengthAndOffset RepetitionPeriodLengthAndOffset     OPTIONAL
}

ConstantValue ::=               INTEGER (-35..10)

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

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

CPCH-SetInfo ::=                SEQUENCE {
    cpch-SetID                      CPCH-SetID,
    transportFormatSet              TransportFormatSet,
    tfcs                            TFCS,
    ap-PreambleScramblingCode       AP-PreambleScramblingCode,
    ap-AICH-ChannelisationCode      AP-AICH-ChannelisationCode,
    cd-PreambleScramblingCode       CD-PreambleScramblingCode,
    cd-CA-ICH-ChannelisationCode    CD-CA-ICH-ChannelisationCode,
    cd-AccessSlotSubchannelList     CD-AccessSlotSubchannelList         OPTIONAL,
    cd-SignatureCodeList            CD-SignatureCodeList                OPTIONAL,
    deltaPp-m                       DeltaPp-m,
    ul-DPCCH-SlotFormat             UL-DPCCH-SlotFormat,
    n-StartMessage                  N-StartMessage,
    n-EOT                           N-EOT,
    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..maxCPCHsets)) OF
                                        CPCH-SetInfo

CPCH-StatusIndicationMode ::=       ENUMERATED {
                                        pa-mode,
                                        pamsf-mode }

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

-- DefaultDPCH-OffsetValueFDD and DefaultDPCH-OffsetValueTDD corresponds to
-- IE "Default DPCH Offset Value" depending on the mode.
-- Actual value = IE value * 512
DefaultDPCH-OffsetValueFDD ::=      INTEGER (0..599)

DefaultDPCH-OffsetValueTDD ::=      INTEGER (0..7)

DeltaPp-m ::=                       INTEGER (-10..10)

-- Actual value = IE value * 0.1
DeltaSIR ::=                        INTEGER (0..30)

DL-CCTrCh ::=                       SEQUENCE {
    tfcs-Identity                       TFCS-IdentityPlain                  OPTIONAL,
    timeInfo                            TimeInfo,
    dl-CCTrCH-TimeslotsCodes            DownlinkTimeslotsCodes              OPTIONAL,
    ul-CCTrChTPCList                    UL-CCTrChTPCList                    OPTIONAL
}

DL-CCTrChList ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        DL-CCTrCh

DL-ChannelisationCode ::=           SEQUENCE {
    secondaryScramblingCode             SecondaryScramblingCode             OPTIONAL,
    sf-AndCodeNumber                    SF512-AndCodeNumber,
    scramblingCodeChange                ScramblingCodeChange                OPTIONAL
}

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

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

DL-CommonInformationPost ::=        SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPost
}

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

DL-CompressedModeMethod ::=         ENUMERATED {
                                        puncturing, sf-2,
                                        higherLayerScheduling }

DL-DPCH-InfoCommon ::=              SEQUENCE {
    cfnHandling                         CHOICE {
        maintain                            NULL,
        initialise                          SEQUENCE {
            cfntargetsfnframeoffset             Cfntargetsfnframeoffset             OPTIONAL
        }
    },
```

```
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL,
            dl-rate-matching-restriction        Dl-rate-matching-restriction        OPTIONAL,
            spreadingFactorAndPilot             SF512-AndPilot,
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL
        }
    }
}

DL-DPCH-InfoCommonPost ::=          SEQUENCE {
    dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo                OPTIONAL
}

DL-DPCH-InfoCommonPredef ::=        SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            spreadingFactorAndPilot             SF512-AndPilot,
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            commonTimeslotInfo                  CommonTimeslotInfo
        }
    }
}

DL-DPCH-InfoPerRL ::=               CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
        dcph-FrameOffset                    DPCH-FrameOffset,
        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-DPCH-InfoPerRL-PostFDD ::=                           SEQUENCE {
        pCPICH-UsageForChannelEst               PCPICH-UsageForChannelEst,
        dl-ChannelisationCode                   DL-ChannelisationCode,
        tpc-CombinationIndex                    TPC-CombinationIndex
}

DL-DPCH-InfoPerRL-PostTDD ::=           SEQUENCE {
    dl-CCTrCH-TimeslotsCodes                    DownlinkTimeslotsCodes
}

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

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

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                                 PrimaryCCPCH-Info
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL                   OPTIONAL,
    secondaryCCPCH-Info                 SecondaryCCPCH-Info                 OPTIONAL
}
```

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

DL-InformationPerRL-ListPostFDD ::= SEQUENCE (SIZE (1..maxRL)) OF
                                        DL-InformationPerRL-PostFDD

DL-InformationPerRL-PostFDD ::=     SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-PostFDD
}

DL-InformationPerRL-PostTDD ::=     SEQUENCE {
    primaryCCPCH-Info                   PrimaryCCPCH-InfoPost,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-PostTDD
}

DL-PDSCH-Information ::=            SEQUENCE {
    pdsch-SHO-DCH-Info                  PDSCH-SHO-DCH-Info                  OPTIONAL,
    pdsch-CodeMapping                   PDSCH-CodeMapping                   OPTIONAL
}

Dl-rate-matching-restriction ::=    SEQUENCE {
    restrictedTrCH-InfoList             RestrictedTrCH-InfoList             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-ChannelisationCodesShort ::=  SEQUENCE {
    codesRepresentation                 CHOICE {
        consecutive                         SEQUENCE {
            firstChannelisationCode             DL-TS-ChannelisationCode,
            lastChannelisationCode              DL-TS-ChannelisationCode
        },
        bitmap                              BIT STRING (SIZE (16))
    }
}

DownlinkAdditionalTimeslots ::=     SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo              IndividualTimeslotInfo,
            dl-TS-ChannelisationCodesShort      DL-TS-ChannelisationCodesShort
        }
    }
}

DownlinkTimeslotsCodes ::=      SEQUENCE {
    firstIndividualTimeslotInfo         IndividualTimeslotInfo,
    dl-TS-ChannelisationCodesShort      DL-TS-ChannelisationCodesShort,
    moreTimeslots                       CHOICE {
        noMore                              NULL,
        additionalTimeslots                 CHOICE {
            consecutive                         INTEGER (1..maxTS-1),
            timeslotList                        SEQUENCE (SIZE (1..maxTS-1)) OF
                                                    DownlinkAdditionalTimeslots
        }
    }
}

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
}

DPCH-CompressedModeStatusInfo ::=   SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-SequenceShort

-- TABULAR: Actual value = IE value * 256
DPCH-FrameOffset::=                 INTEGER (0..149)
```

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

DSCH-MappingList ::=                SEQUENCE (SIZE (1..maxPDSCH-TFCIgroups)) OF
                                        DSCH-Mapping

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

DurationTimeInfo ::=                INTEGER (1..4096)

-- TABULAR : value [Duration = infinite] is the value by default,
-- and is encoded by absence of the full sequence. If the sequence is present,
-- thefield is absent, the default is respectivelyinfinite. Presence of the
-- field absent should not be used, but shall be understood as if the
-- sequence was absent.

DynamicPersistenceLevel ::=         INTEGER (1..8)

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

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

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

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

FrequencyInfo ::=                   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 FrequencyInfoFDD,
        tdd                                 FrequencyInfoTDD    }
}

FrequencyInfoFDD ::=                SEQUENCE {
    uarfcn-UL                           UARFCN              OPTIONAL,
    uarfcn-DL                           UARFCN
}

FrequencyInfoTDD ::=                SEQUENCE {
    uarfcn-Nt                           UARFCN
}

IndividualTimeslotInfo ::=          SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    tfci-Existence                      BOOLEAN,
    midambleShiftAndBurstType           MidambleShiftAndBurstType
}

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

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

ITP ::=                             ENUMERATED {
                                        mode0, mode1 }

MaxAllowedUL-TX-Power ::=           INTEGER (-50..33)

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

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

MidambleConfiguration ::=           SEQUENCE {
    burstType1                          BurstType1                      DEFAULT ms8,
    -- TABULAR: The default value for BurstType2 has not been specified due to
    -- compactness reasons.
    burstType2                          BurstType2
}
```

```
MidambleShiftAndBurstType ::=       SEQUENCE {
    burstType                           CHOICE {
        type1                               SEQUENCE {
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        },
        type2                               SEQUENCE {
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftShort
                }
            }
        },
        type3                               SEQUENCE {
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        }
    }
}

MidambleShiftLong ::=               INTEGER (0..15)


MidambleShiftShort ::=              INTEGER (0..5)

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

MultiCodeInfo ::=                   INTEGER (1..16)


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

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

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

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

NB01 ::=                            INTEGER (0..50)

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

NumberOfDPDCH ::=                   INTEGER (1..maxDPDCH-UL)

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

OpenLoopPowerControl-TDD ::=        SEQUENCE {
    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power,
    alpha                               Alpha                          OPTIONAL,
    prach-ConstantValue                 ConstantValue,
    dpch-ConstantValue                  ConstantValue,
    pusch-ConstantValue                 ConstantValue                  OPTIONAL
}
PagingIndicatorLength ::=           ENUMERATED {
                                        pi4, pi8, pi16 }

PC-Preamble ::=                     ENUMERATED {
                                        pcp0, pcp15 }

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

PCPCH-ChannelInfo ::=               SEQUENCE {
    pcpch-UL-ScramblingCode             INTEGER (0..79),
    pcpch-DL-ChannelisationCode         INTEGER (0..511),
    pcpch-DL-ScramblingCode             SecondaryScramblingCode                OPTIONAL,
    pcp-Length                          PCP-Length,
    ucsm-Info                           UCSM-Info                              OPTIONAL
}
```

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

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

PDSCH-CapacityAllocationInfo ::=    SEQUENCE {
    pdsch-PowerControlInfo              PDSCH-PowerControlInfo              OPTIONAL,
    pdsch-AllocationPeriodInfo          AllocationPeriodInfo,
    tfcs-Identity                       TFCS-IdentityPlain                  OPTIONAL,
    configuration                       CHOICE {
        old-Configuration                   SEQUENCE {
            pdsch-Identity                      PDSCH-Identity
        },
        new-Configuration                   SEQUENCE {
            pdsch-Info                          PDSCH-Info,
            pdsch-Identity                      PDSCH-Identity              OPTIONAL
        }
    }
}

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..maxPDSCH-TFCIgroups)) OF
                                        PDSCH-CodeMap

PDSCH-CodeMapping ::=               SEQUENCE {
    dl-ScramblingCode                   SecondaryScramblingCode             OPTIONAL,
    signallingMethod                    CHOICE {
        codeRange                           CodeRange,
        tfci-Range                          DSCH-MappingList,
        explicit                            PDSCH-CodeInfoList,
        replace                             ReplacedPDSCH-CodeInfoList
    }
}

PDSCH-Identity ::=                  INTEGER (1..hiPDSCHidentities)


PDSCH-Info ::=                      SEQUENCE {
    tfcs-Identity                       TFCS-IdentityPlain                  OPTIONAL,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    pdsch-TimeslotsCodes                DownlinkTimeslotsCodes              OPTIONAL
}

PDSCH-PowerControlInfo ::=          SEQUENCE {
    tpc-StepSizeTDD                     TPC-StepSizeTDD                     OPTIONAL,
    ul-CCTrChTPCList                    UL-CCTrChTPCList                    OPTIONAL
}

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

PDSCH-SysInfo ::=                   SEQUENCE {
    pdsch-Identity                      PDSCH-Identity,
    pdsch-Info                          PDSCH-Info,
    dsch-TFS                            TransportFormatSet                  OPTIONAL,
    dsch-TFCS                           TFCS                                OPTIONAL
}

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

PDSCH-SysInfoList-SFN ::=           SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pdsch-SysInfo                           PDSCH-SysInfo,
```

```
    sfn-TimeInfo                            SFN-TimeInfo                    OPTIONAL
}

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

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

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

PICH-Info ::=                       CHOICE {
    fdd                                 SEQUENCE {
        channelisationCode256               ChannelisationCode256,
        pi-CountPerFrame                    PI-CountPerFrame,
        sttd-Indicator                      BOOLEAN
    },
    tdd                                 SEQUENCE {
        channelisationCode                  TDD-PICH-CCode              OPTIONAL,
        timeslot                            TimeslotNumber              OPTIONAL,
        burstType                           CHOICE {
            type-1                              MidambleShiftLong,
            type-2                              MidambleShiftShort
        }                                                               OPTIONAL,
        repetitionPeriodLengthOffset        RepPerLengthOffset-PICH     OPTIONAL,
        pagingIndicatorLength               PagingIndicatorLength       DEFAULT pi4,
        n-GAP                               N-GAP                       DEFAULT f4,
        n-PCH                               N-PCH                       DEFAULT 2
    }
}

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

PilotBits128 ::=                    ENUMERATED {
                                        pb4, pb8 }

PilotBits256 ::=                    ENUMERATED {
                                        pb2, pb4, pb8 }

PositionFixedOrFlexible ::=         ENUMERATED {
                                        fixed,
                                        flexible }

PowerControlAlgorithm ::=           CHOICE {
    algorithm1                          TPC-StepSizeFDD,
    algorithm2                          NULL
}

PowerRampStep ::=                   INTEGER (1..8)

PRACH-Midamble ::=                  ENUMERATED {
                                        direct,
                                        direct-Inverted }

PRACH-Partitioning ::=              CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxASC)) OF
                                            ASCSetting,
    tdd                                 SEQUENCE (SIZE (1..maxASC)) OF
                                            ASC
}

PRACH-PowerOffset ::=               SEQUENCE {
    powerRampStep                       PowerRampStep,
    preambleRetransMax                  PreambleRetransMax
}

PRACH-RACH-Info ::=                 SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            availableSignatures                 AvailableSignatures,
            availableSF                         SF-PRACH,
            preambleScramblingCodeWordNumber    PreambleScramblingCodeWordNumber,
            puncturingLimit                     PuncturingLimit,
            availableSubChannelNumbers          AvailableSubChannelNumbers
        },
        tdd                                 SEQUENCE {
            timeslot                            TimeslotNumber,
            channelisationCode                  TDD-PRACH-CCodeList,
            prach-Midamble                      PRACH-Midamble          OPTIONAL
        }
    }
```

```
}

PRACH-SystemInformation ::=         SEQUENCE {
    prach-RACH-Info                     PRACH-RACH-Info,
    transportChannelIdentity            TransportChannelIdentity,
    rach-TransportFormatSet             TransportFormatSet                  OPTIONAL,
    rach-TFCS                           TFCS                                OPTIONAL,
    prach-Partitioning                  PRACH-Partitioning                  OPTIONAL,
    persistenceScalingFactorList        PersistenceScalingFactorList        OPTIONAL,
    ac-To-ASC-MappingTable              AC-To-ASC-MappingTable              OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            constantValue                       ConstantValue               OPTIONAL,
            prach-PowerOffset                   PRACH-PowerOffset           OPTIONAL,
            rach-TransmissionParameters         RACH-TransmissionParameters OPTIONAL,
            aich-Info                           AICH-Info                   OPTIONAL
        },
        tdd                                 NULL
    }
}

PRACH-SystemInformationList ::=     SEQUENCE (SIZE (1..maxPRACH)) OF
                                        PRACH-SystemInformation

PreambleRetransMax ::=              INTEGER (1..64)

PreambleScramblingCodeWordNumber ::=    INTEGER (0..15)

PreDefPhyChConfiguration ::=        SEQUENCE {
    ul-DPCH-InfoPredef                  UL-DPCH-InfoPredef,
    dl-CommonInformationPredef          DL-CommonInformationPredef  OPTIONAL
}

PrimaryCCPCH-Info ::=               CHOICE {
    fdd                                 SEQUENCE {
        tx-DiversityIndicator               BOOLEAN
    },
    tdd                                 SEQUENCE {
        syncCase                            CHOICE {
            syncCase1                           SEQUENCE {
                timeslot                            TimeslotNumber
            },
            syncCase2                           SEQUENCE {
                timeslotSync2                       TimeslotSync2
            }
        }                                                                   OPTIONAL,
        cellParametersID                    CellParametersID                OPTIONAL,
        blockSTTD-Indicator                 BOOLEAN
    }
}

PrimaryCCPCH-InfoPost ::=           SEQUENCE {
    syncCase                            CHOICE {
        syncCase1                           SEQUENCE {
            timeslot                            TimeslotNumber
        },
        syncCase2                           SEQUENCE {
            timeslotSync2                       TimeslotSync2
        }
    },
    cellParametersID                    CellParametersID,
    blockSTTD-Indicator                 BOOLEAN
}

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

PrimaryCPICH-Info ::=               SEQUENCE {
    primaryScramblingCode               PrimaryScramblingCode
}

PrimaryCPICH-TX-Power ::=           INTEGER (-10..50)

PrimaryScramblingCode ::=           INTEGER (0..511)

PuncturingLimit ::=                 ENUMERATED {
                                        pl0-40, pl0-44, pl0-48, pl0-52, pl0-56,
                                        pl0-60, pl0-64, pl0-68, pl0-72, pl0-76,
                                        pl0-80, pl0-84, pl0-88, pl0-92, pl0-96, pl1 }

PUSCH-CapacityAllocationInfo ::=    SEQUENCE {
    pusch-Allocation                    CHOICE {
        pusch-AllocationPending             NULL,
```

```
        pusch-AllocationAssignment          SEQUENCE {
            pdsch-AllocationPeriodInfo          AllocationPeriodInfo,
            pusch-PowerControlInfo              UL-TargetSIR                OPTIONAL,
            tfcs-Identity                       TFCS-IdentityPlain          OPTIONAL,
            configuration                       CHOICE {
                old-Configuration                   SEQUENCE {
                    pusch-Identity                      PUSCH-Identity
                },
                new-Configuration                   SEQUENCE {
                    pusch-Info                          PUSCH-Info,
                    pusch-Identity                      PUSCH-Identity      OPTIONAL
                }
            }
        }
    }
}

PUSCH-Identity ::=                  INTEGER (1..hiPUSCHidentities)

PUSCH-Info ::=                      SEQUENCE {
    tfcs-Identity                       TFCS-IdentityPlain              OPTIONAL,
    commonTimeslotInfo                  CommonTimeslotInfo              OPTIONAL,
    pusch-TimeslotsCodes                UplinkTimeslotsCodes            OPTIONAL
}

PUSCH-SysInfo ::=                   SEQUENCE {
    pusch-Identity                      PUSCH-Identity,
    pusch-Info                          PUSCH-Info,
    usch-TFS                            TransportFormatSet              OPTIONAL,
    usch-TFCS                           TFCS                            OPTIONAL
}

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

PUSCH-SysInfoList-SFN ::=           SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pusch-SysInfo                           PUSCH-SysInfo,
    sfn-TimeInfo                            SFN-TimeInfo                OPTIONAL
}

RACH-TransmissionParameters ::=     SEQUENCE {
    mmax                                INTEGER (1..32),
    nb01Min                             NB01,
    nb01Max                             NB01
}

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..maxTFCI-2-Combs)) 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)
}

RestrictedTrCH ::=                  SEQUENCE {
    restrictedDL-TrCH-Identity          TransportChannelIdentity,
    allowedTFIList                      AllowedTFI-List
}

RestrictedTrCH-InfoList ::=         SEQUENCE (SIZE(1..maxTrCH)) OF
                                        RestrictedTrCH

RL-AdditionInformation ::=          SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL,
    tfci-CombiningIndicator             BOOLEAN,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH                  OPTIONAL
}

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

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

RL-RemovalInformationList ::=       SEQUENCE (SIZE (1..maxRL-1)) OF
                                        PrimaryCPICH-Info

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-ChannelisationCodeList ::=   SEQUENCE (SIZE (1..16)) OF
                                        SCCPCH-ChannelisationCode

SCCPCH-InfoForFACH ::=              SEQUENCE {
    secondaryCCPCH-Info                 SecondaryCCPCH-Info,
    tfcs                                TFCS,
    fach-PCH-InformationList            FACH-PCH-InformationList,
    sib-ReferenceListFACH               SIB-ReferenceListFACH
}

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

SCCPCH-SystemInformationList ::=    SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        SCCPCH-SystemInformation
```

```
ScramblingCodeChange ::=            ENUMERATED {
                                        codeChange, noCodeChange }

ScramblingCodeType ::=              ENUMERATED {
                                        shortSC,
                                        longSC }

SecondaryCCPCH-Info ::=             SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            pCPICH-UsageForChannelEst       PCPICH-UsageForChannelEst,
            secondaryCPICH-Info             SecondaryCPICH-Info             OPTIONAL,
            secondaryScramblingCode         SecondaryScramblingCode         OPTIONAL,
            sttd-Indicator                  BOOLEAN,
            sf-AndCodeNumber                SF256-AndCodeNumber,
            pilotSymbolExistence            BOOLEAN,
            tfci-Existence                  BOOLEAN,
            positionFixedOrFlexible         PositionFixedOrFlexible,
            timingOffset                    TimingOffset                    DEFAULT 0
        },
        tdd                             SEQUENCE {
            -- TABULAR: the offset is included in CommonTimeslotInfoSCCPCH
            commonTimeslotInfo              CommonTimeslotInfoSCCPCH,
            individualTimeslotInfo          IndividualTimeslotInfo,
            channelisationCode              SCCPCH-ChannelisationCodeList
        }
    }
}

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

SecondaryScramblingCode ::=         INTEGER (1..15)

SecondInterleavingMode ::=          ENUMERATED {
                                        frameRelated, timeslotRelated }

-- SF256-AndCodeNumber encodes both "Spreading factor" and "Code Number"
SF256-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)
}

-- SF512-AndCodeNumber encodes both "Spreading factor" and "Code Number"
SF512-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),
    sf512                               INTEGER (0..511)
}

-- SF512-AndPilot encodes both "Spreading factor" and "Number of bits for Pilot bits"
SF512-AndPilot ::=                  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 }

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

SFN-TimeInfo ::=                    SEQUENCE {
    activationTimeSFN                   INTEGER (0..4095),
    physChDuration                  DurationTimeInfo
```

```
}

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

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
}

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-CCode8 ::=                ENUMERATED {
                                        cc8-1, cc8-2, cc8-3, cc8-4,
                                        cc8-5, cc8-6, cc8-7, cc8-8 }

TDD-PRACH-CCode16 ::=               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-CCodeList ::=             CHOICE {
    sf8                                 SEQUENCE (SIZE (1..8)) OF
                                            TDD-PRACH-CCode8,
    sf16                                SEQUENCE (SIZE (1..8)) OF
                                            TDD-PRACH-CCode16
}

TFC-ControlDuration ::=             ENUMERATED {
                                        tfc-cd1, tfc-cd2, tfc-cd4, tfc-cd8,
                                        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 (15..270)

TGL ::=                             INTEGER (1..14)

TGMP ::=                            ENUMERATED {
                                        tdd-Measurement, fdd-Measurement,
                                        gsm-CarrierRSSIMeasurement,
                                        gsm-initialBSICIdentification, gsmBSICReconfirmation }

TGP-Sequence ::=                    SEQUENCE {
    tgpsi                               TGPSI,
    tgps-StatusFlag                     TGPS-StatusFlag,
    tgcfn                               TGCFN,
    tgps-ConfigurationParams            TGPS-ConfigurationParams            OPTIONAL
}

TGP-SequenceList ::=                SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-Sequence

TGP-SequenceShort ::=               SEQUENCE {
    tgpsi                               TGPSI,
    tgps-StatusFlag                     TGPS-StatusFlag,
    tgcfn                               TGCFN
}

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,
    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,
    deltaSIR1                           DeltaSIR,
    deltaSIRAfter1                      DeltaSIR,
    deltaSIR2                           DeltaSIR                            OPTIONAL,
    deltaSIRAfter2                      DeltaSIR                            OPTIONAL
}

TGPS-StatusFlag ::=                 ENUMERATED {
                                        tgpsActive, tgpsInactive }

TGPSI ::=                           INTEGER (1..maxTGPS)

TGSN ::=                            INTEGER (0..14)

TimeInfo ::=                        SEQUENCE {
    activationTime                      ActivationTime                      OPTIONAL,
    durationTimeInfo                    DurationTimeInfo                    OPTIONAL
}

TimeslotList ::=                    SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotNumber

TimeslotNumber ::=                      INTEGER (0..14)

TimeslotSync2 ::=               INTEGER (0..6)

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

TPC-CombinationIndex ::=            INTEGER (0..5)

TPC-StepSizeFDD ::=                 INTEGER (0..1)

TPC-StepSizeTDD ::=                 INTEGER (1..3)

TX-DiversityMode ::=                ENUMERATED {
                                        noDiversity,
                                        sttd,
                                        closedLoopMode1,
                                        closedLoopMode2 }

UARFCN ::=                      INTEGER (0..16383)

UCSM-Info ::=                       SEQUENCE {
    minimumSpreadingFactor              MinimumSpreadingFactor,
    nf-Max                              NF-Max,
    channelReqParamsForUCSM             ChannelReqParamsForUCSM
}

UL-CCTrCH ::=                       SEQUENCE {
    tfcs-Identity                       TFCS-IdentityPlain                  OPTIONAL,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes                OPTIONAL
}

UL-CCTrCHList ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        UL-CCTrCH

UL-CCTrChTPCList ::=                SEQUENCE (SIZE (0..maxCCTrCH)) OF
                                            TFCS-Identity

UL-ChannelRequirement ::=           CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    cpch-SetInfo                        CPCH-SetInfo
}
```

```
UL-ChannelRequirementWithCPCH-SetID ::= CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    cpch-SetInfo                        CPCH-SetInfo,
    cpch-SetID                          CPCH-SetID
}

UL-CompressedModeMethod ::=         ENUMERATED {
                                        sf-2,
                                        higherLayerScheduling }

UL-DL-Mode ::=                      CHOICE {
    ul                                  UL-CompressedModeMethod,
    dl                                  DL-CompressedModeMethod
}

UL-DPCCH-SlotFormat ::=             ENUMERATED {
                                        slf0, slf1, slf2 }

UL-DPCH-Info ::=                    SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo            OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            numberOfDPDCH                       NumberOfDPDCH               DEFAULT 1,
            spreadingFactor                     SpreadingFactor,
            tfci-Existence                      BOOLEAN,
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            -- The IE above is conditional based on history
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl     OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoPostFDD ::=             SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPostFDD,
            scramblingCodeType                  ScramblingCodeType,
            reducedScramblingCodeNumber         ReducedScramblingCodeNumber,
            spreadingFactor                     SpreadingFactor

}

UL-DPCH-InfoPostTDD ::=             SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPostTDD,
    ul-TimingAdvance                    UL-TimingAdvanceControl                 OPTIONAL,
    ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes
}

UL-DPCH-InfoPredef ::=              SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPredef,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            tfci-Existence                      BOOLEAN,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            commonTimeslotInfo                  CommonTimeslotInfo
        }
    }
}

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 {
        ul-TargetSIR                        UL-TargetSIR,
            ul-OL-PC-Signalling                 CHOICE {
                broadcast-UL-OL-PC-info             NULL,
                handoverGroup                       SEQUENCE {
                    individualTS-InterferenceList       IndividualTS-InterferenceList,
                    dpch-ConstantValue                  ConstantValue,
                    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }                                                               OPTIONAL
    }
```

```
}

UL-DPCH-PowerControlInfoPostFDD ::= SEQUENCE {
            powerControlAlgorithm               PowerControlAlgorithm
            -- TABULAR: TPC step size nested inside PowerControlAlgorithm
}

UL-DPCH-PowerControlInfoPostTDD ::= SEQUENCE {
    ul-TargetSIR                        UL-TargetSIR,
    ul-TimeslotInterference             UL-Interference
}

UL-DPCH-PowerControlInfoPredef ::=      CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble
    },
    tdd                                 SEQUENCE {
        dpch-ConstantValue                  ConstantValue
    }
}

UL-Interference ::=                 INTEGER (-110..-70)

UL-ScramblingCode ::=               INTEGER (0..16777215)

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

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

UL-TimingAdvanceControl ::=         CHOICE {
    disabled                            NULL,
    enabled                             SEQUENCE {
        ul-TimingAdvance                    UL-TimingAdvance                OPTIONAL,
        activationTime                      ActivationTime                  OPTIONAL
    }
}

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 }

UL-TS-ChannelisationCodeList ::=    SEQUENCE (SIZE (1..2)) OF
                                        UL-TS-ChannelisationCode

UplinkAdditionalTimeslots ::=       SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo                      IndividualTimeslotInfo,
            ul-TS-ChannelisationCodeList                UL-TS-ChannelisationCodeList
        }
    }
}

UplinkTimeslotsCodes ::=            SEQUENCE {
    dynamicSFusage                      BOOLEAN,
    firstIndividualTimeslotInfo         IndividualTimeslotInfo,
    ul-TS-ChannelisationCodeList        UL-TS-ChannelisationCodeList,
    moreTimeslots                       CHOICE {
        noMore                              NULL,
        additionalTimeslots                 CHOICE {
            consecutive                         SEQUENCE {
                numAdditionalTimeslots              INTEGER (1..maxTS-1)
            },
            timeslotList                        SEQUENCE (SIZE (1..maxTS-1)) OF
                                                    UplinkAdditionalTimeslots
        }
    }
}

-- ***************************************************
--
--      MEASUREMENT INFORMATION ELEMENTS (10.3.7)
```

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

AcquisitionSatInfo ::=              SEQUENCE {
    satID                               SatID,
    doppler0thOrder                     INTEGER (-2048..2047),
    extraDopplerInfo                    ExtraDopplerInfo                    OPTIONAL,
    codePhase                           INTEGER (0..1022),
    integerCodePhase                    INTEGER (0..19),
    gps-BitNumber                       INTEGER (0..3),
    codePhaseSearchWindow               CodePhaseSearchWindow,
    azimuthAndElevation                 AzimuthAndElevation                 OPTIONAL
}

AcquisitionSatInfoList ::=          SEQUENCE (SIZE (1..maxSat)) OF
                                        AcquisitionSatInfo

AdditionalAssistanceData ::=        OCTET STRING (SIZE (1..38))

AdditionalMeasurementID-List ::=    SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasurementIdentity

AlmanacSatInfo ::=                  SEQUENCE {
    satID                               SatID,
    e                                   BIT STRING (SIZE (16)),
    t-oa                                BIT STRING (SIZE (8)),
    deltaI                              BIT STRING (SIZE (16)),
    omegaDot                            BIT STRING (SIZE (16)),
    satHealth                           BIT STRING (SIZE (8)),
    a-Sqrt                              BIT STRING (SIZE (24)),
    omega0                              BIT STRING (SIZE (24)),
    m0                                  BIT STRING (SIZE (24)),
    omega                               BIT STRING (SIZE (24)),
    af0                                 BIT STRING (SIZE (11)),
    af1                                 BIT STRING (SIZE (11))
}

AlmanacSatInfoList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        AlmanacSatInfo

AverageRLC-BufferPayload ::=        ENUMERATED {
                                        pla0, pla4, pla8, pla16, pla32,
                                        pla64, pla128, pla256, pla512,
                                        pla1024, pla2k, pla4k, pla8k, pla16k,
                                        pla32k, pla64k, pla128k, pla256k,
                                        pla512k, pla1024k }

AzimuthAndElevation ::=             SEQUENCE {
    azimuth                             INTEGER (0..31),
    elevation                           INTEGER (0..7)
}

BadSatList ::=                      SEQUENCE (SIZE (1..maxSat)) OF
                                        INTEGER (0..63)

BCCH-ARFCN ::=                      INTEGER (0..1023)

BLER-MeasurementResults ::=         SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    dl-TransportChannelBLER             DL-TransportChannelBLER             OPTIONAL
}

BLER-MeasurementResultsList ::=     SEQUENCE (SIZE (1..maxTrCH)) OF
                                        BLER-MeasurementResults

BLER-TransChIdList ::=              SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

BSIC-VerificationRequired ::=       ENUMERATED {
                                        required, notRequired }

BSICReported ::=                    CHOICE {
    verifiedBSIC                        INTEGER (0..maxCellMeas),
    nonVerifiedBSIC                     BCCH-ARFCN
}

BurstModeParameters ::=             SEQUENCE {
    burstStart                          INTEGER (0..15),
    burstLength                         INTEGER (10..25),
    burstFreq                           INTEGER (1..16)
}

CellDCH-ReportCriteria ::=          CHOICE {
```

```
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

-- Actual value = IE value * 0.5
CellIndividualOffset ::=            INTEGER (-20..20)


CellInfo ::=                        SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    }
}

CellInfoSI-RSCP ::=                 SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-RSCP        OPTIONAL
}

CellInfoSI-ECN0 ::=                 SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-ECN0    OPTIONAL
}

CellInfoSI-HCS-RSCP ::=             SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-RSCP    OPTIONAL
}
```

```
CellInfoSI-HCS-ECN0 ::=             SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-ECN0    OPTIONAL
}

CellMeasuredResults ::=             SEQUENCE {
    cellIdentity                        CellIdentity                        OPTIONAL,
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    cellSynchronisationInfo         CellSynchronisationInfo         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            cpich-Ec-N0                         CPICH-Ec-N0                 OPTIONAL,
            cpich-RSCP                          CPICH-RSCP                  OPTIONAL,
            pathloss                            Pathloss                    OPTIONAL
        },
        tdd                                 SEQUENCE {
            cellParametersID                    CellParametersID,
            proposedTGSN                        TGSN                        OPTIONAL,
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP           OPTIONAL,
            timeslotISCP-List                   TimeslotISCP-List           OPTIONAL
        }
    }
}

CellMeasurementEventResults ::=     CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCPICH-Info,
    tdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCCPCH-Info
}

CellPosition ::=                    SEQUENCE {
    relativeNorth                       INTEGER (-32767..32767),
    relativeEast                        INTEGER (-32767..32767),
    relativeAltitude                    INTEGER (-4095..4095)
}

CellReportingQuantities ::=         SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    cellIdentity-reportingIndicator                     BOOLEAN,
    cellSynchronisationInfoReportingIndicator           BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            cpich-Ec-N0-reportingIndicator                          BOOLEAN,
            cpich-RSCP-reportingIndicator                           BOOLEAN,
            pathloss-reportingIndicator                         BOOLEAN
        },
        tdd                                 SEQUENCE {
            timeslotISCP-reportingIndicator                     BOOLEAN,
            proposedTGSN-ReportingRequired                      BOOLEAN,
            primaryCCPCH-RSCP-reportingIndicator                    BOOLEAN,
            pathloss-reportingIndicator                         BOOLEAN
        }
    }
}

CellSelectReselectInfoSIB-11-12 ::= SEQUENCE {
    q-Offset1S-N                        Q-OffsetS-N                         DEFAULT 0,
    q-Offset2S-N                        Q-OffsetS-N                         OPTIONAL,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    hcs-NeighbouringCellInformation-RSCP        HCS-NeighbouringCellInformation-RSCP
    OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                   OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
        tdd                                 SEQUENCE {
```

```
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		gsm									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		}
	}
}

CellSelectReselectInfoSIB-11-12-RSCP ::=	SEQUENCE {
	q-OffsetS-N							Q-OffsetS-N						DEFAULT 0,
	maxAllowedUL-TX-Power				MaxAllowedUL-TX-Power				OPTIONAL,
	modeSpecificInfo					CHOICE {
		fdd									SEQUENCE {
			q-QualMin							Q-QualMin						OPTIONAL,
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		tdd									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		gsm									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		}
	}
}

CellSelectReselectInfoSIB-11-12-ECN0 ::=	SEQUENCE {
	q-Offset1S-N						Q-OffsetS-N							DEFAULT 0,
	q-Offset2S-N						Q-OffsetS-N							DEFAULT 0,
	maxAllowedUL-TX-Power				MaxAllowedUL-TX-Power				OPTIONAL,
	modeSpecificInfo					CHOICE {
		fdd									SEQUENCE {
			q-QualMin							Q-QualMin						OPTIONAL,
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		tdd									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		gsm									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		}
	}
}

CellSelectReselectInfoSIB-11-12-HCS-RSCP ::=	SEQUENCE {
	q-OffsetS-N							Q-OffsetS-N						DEFAULT 0,
	maxAllowedUL-TX-Power				MaxAllowedUL-TX-Power				OPTIONAL,
	hcs-NeighbouringCellInformation-RSCP		HCS-NeighbouringCellInformation-RSCP
	OPTIONAL,
	modeSpecificInfo					CHOICE {
		fdd									SEQUENCE {
			q-QualMin							Q-QualMin						OPTIONAL,
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		tdd									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		gsm									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		}
	}
}

CellSelectReselectInfoSIB-11-12-HCS-ECN0 ::=	SEQUENCE {
	q-Offset1S-N						Q-OffsetS-N							DEFAULT 0,
	q-Offset2S-N						Q-OffsetS-N							DEFAULT 0,
	maxAllowedUL-TX-Power				MaxAllowedUL-TX-Power				OPTIONAL,
	hcs-NeighbouringCellInformation-ECN0		HCS-NeighbouringCellInformation-ECN0
	OPTIONAL,
	modeSpecificInfo					CHOICE {
		fdd									SEQUENCE {
			q-QualMin							Q-QualMin						OPTIONAL,
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		tdd									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		},
		gsm									SEQUENCE {
			q-RxlevMin							Q-RxlevMin						OPTIONAL
		}
	}
}

CellSynchronisationInfo ::=			SEQUENCE {
```

```
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            countC-SFN-Frame-difference         CountC-SFN-Frame-difference     OPTIONAL,
            tm                                  INTEGER(0..38399)
        },
        tdd                                 SEQUENCE {
            countC-SFN-Frame-difference         CountC-SFN-Frame-difference
        }
    }
}

CellToMeasure ::=                   SEQUENCE {
    sfn-sfn-Drift                       INTEGER (0..30)                     OPTIONAL,
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    sfn-SFN-ObservedTimeDifference      SFN-SFN-ObsTimeDifference1,
    fineSFN-SFN                         FineSFN-SFN,
    cellPosition                        CellPosition                        OPTIONAL
}

CellToMeasureInfoList ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellToMeasure

CellToReport ::=                    SEQUENCE {
    bsicReported                        BSICReported
}

CellToReportList ::=                SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellToReport

CodePhaseSearchWindow ::=           ENUMERATED {
                                        w1023, w1, w2, w3, w4, w6, w8,
                                        w12, w16, w24, w32, w48, w64,
                                        w96, w128, w192 }

CountC-SFN-Frame-difference ::= SEQUENCE {
    countC-SFN-High                 INTEGER(0..15),         -- Actual value = IE value * 256
    off                             INTEGER(0..255)
}

CPICH-Ec-N0 ::=                     INTEGER (-20..0)

-- IE value 0 = <-24 dB, 1 = between -24 and -23 and so on
CPICH-Ec-N0-OTDOA ::=               INTEGER (0..26)

CPICH-RSCP ::=                      INTEGER (-115..-40)


DeltaPRC ::=                        INTEGER (-127..127)

DeltaRRC ::=                        INTEGER (-7..7)

DGPS-CorrectionSatInfo ::=          SEQUENCE {
    satID                               SatID,
    iode                                BIT STRING (SIZE (8)),
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
    deltaPRC2                           DeltaPRC,
    deltaRRC2                           DeltaRRC,
    deltaPRC3                           DeltaPRC,
    deltaRRC3                           DeltaRRC
}

DGPS-CorrectionSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-CorrectionSatInfo

DGPS-Information ::=                SEQUENCE {
    satID                               SatID,
    iode                                IODE,
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
    deltaPRC2                           DeltaPRC,
    deltaRRC2                           DeltaRRC
}

DGPS-InformationList ::=            SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-Information

DiffCorrectionStatus ::=            ENUMERATED {
                                        udre-1-0, udre-0-75, udre-0-5, udre-0-3,
                                        udre-0-2, udre-0-1, noData, invalidData }
```

```
-- Actual value = IE value * 0.02
DL-PhysicalChannelBER ::=           INTEGER (0..255)

DL-TransportChannelBLER ::=         INTEGER (0..63)

DopplerUncertainty ::=              ENUMERATED {
                                        hz12-5, hz25, hz50, hz100, hz200 }

EllipsoidPoint ::=                  OCTET STRING (SIZE (7))

EllipsoidPointAltitude ::=          OCTET STRING (SIZE (9))

EllipsoidPointAltitudeEllipse ::=   OCTET STRING (SIZE (14))

EllipsoidPointUncertCircle ::=      OCTET STRING (SIZE (8))

EllipsoidPointUncertEllipse ::=     OCTET STRING (SIZE (11))

EnvironmentCharacterisation ::=     ENUMERATED {
                                        possibleHeavyMultipathNLOS,
                                        lightMultipathLOS,
                                        notDefined }

Event1a ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1b ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W
}

Event1c ::=                         SEQUENCE {
    replacementActivationThreshold      ReplacementActivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1e ::=                     SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    thresholdUsedFrequency              ThresholdUsedFrequency
}

Event1f ::=                     SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    thresholdUsedFrequency              ThresholdUsedFrequency
}

Event2a ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2b ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2c ::=                         SEQUENCE {
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2d ::=                         SEQUENCE {
```

```
	usedFreqThreshold					Threshold,
	usedFreqW							W,
	hysteresis							HysteresisInterFreq,
	timeToTrigger						TimeToTrigger,
	reportingCellStatus					ReportingCellStatus				OPTIONAL
}

Event2e ::=							SEQUENCE {
	hysteresis							HysteresisInterFreq,
	timeToTrigger						TimeToTrigger,
	reportingCellStatus					ReportingCellStatus				OPTIONAL,
	nonUsedFreqParameterList			NonUsedFreqParameterList		OPTIONAL
}

Event2f ::=							SEQUENCE {
	usedFreqThreshold					Threshold,
	usedFreqW							W,
	hysteresis							HysteresisInterFreq,
	timeToTrigger						TimeToTrigger,
	reportingCellStatus					ReportingCellStatus				OPTIONAL
}

Event3a ::=							SEQUENCE {
	thresholdOwnSystem					Threshold,
	w									W,
	thresholdOtherSystem				Threshold,
	hysteresis							Hysteresis,
	timeToTrigger						TimeToTrigger,
	reportingCellStatus					ReportingCellStatus				OPTIONAL
}

Event3b ::=							SEQUENCE {
	thresholdOtherSystem				Threshold,
	hysteresis							Hysteresis,
	timeToTrigger						TimeToTrigger,
	reportingCellStatus					ReportingCellStatus				OPTIONAL

}

Event3c ::=							SEQUENCE {
	thresholdOtherSystem				Threshold,
	hysteresis							Hysteresis,
	timeToTrigger						TimeToTrigger,
	reportingCellStatus					ReportingCellStatus				OPTIONAL
}

Event3d ::=							SEQUENCE {
	hysteresis							Hysteresis,
	timeToTrigger						TimeToTrigger,
	reportingCellStatus					ReportingCellStatus				OPTIONAL
}

EventIDInterFreq ::=				ENUMERATED {
										e2a, e2b, e2c, e2d, e2e, e2f }

EventIDInterRAT ::=					ENUMERATED {
										e3a, e3b, e3c, e3d }

EventIDIntraFreq ::=				ENUMERATED {
										e1a, e1b, e1c, e1d, e1e,
										e1f, e1g, e1h, e1i }

EventResults ::=					CHOICE {
	intraFreqEventResults				IntraFreqEventResults,
	interFreqEventResults				InterFreqEventResults,
	interRATEventResults				InterRATEventResults,
	trafficVolumeEventResults			TrafficVolumeEventResults,
	qualityEventResults					QualityEventResults,
	ue-InternalEventResults				UE-InternalEventResults,
	up-MeasurementEventResults			UP-MeasurementEventResults
}

ExtraDopplerInfo ::=				SEQUENCE {
	doppler1stOrder						INTEGER (-42..21),
	dopplerUncertainty					DopplerUncertainty
}

FACH-MeasurementOccasionInfo ::=	SEQUENCE {
	fACH-meas-occasion-coeff			INTEGER (1..12)					OPTIONAL,
	inter-freq-FDD-meas-ind				BOOLEAN,
	inter-freq-TDD-meas-ind				BOOLEAN,
	inter-RAT-meas-ind					SEQUENCE (SIZE (1..maxOtherRAT)) OF
											RAT-Type					OPTIONAL
```

```
}

FilterCoefficient ::=               ENUMERATED {
                                        fc0, fc1, fc2, fc3, fc4, fc5,
                                        fc6, fc7, fc8, fc9, fc11, fc13,
                                        fc15, fc17, fc19, spare1 }

FineSFN-SFN ::=                     ENUMERATED {
                                        fs0, fs0-25, fs0-5, fs0-75 }

ForbiddenAffectCell ::=             CHOICE {
    fdd                                 PrimaryCPICH-Info,
    tdd                                 PrimaryCCPCH-Info
}

ForbiddenAffectCellList ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell

FreqQualityEstimateQuantity-FDD ::= ENUMERATED {
                                        cpich-Ec-N0,
                                        cpich-RSCP }

FreqQualityEstimateQuantity-TDD ::= ENUMERATED {
                                        primaryCCPCH-RSCP }

GPS-MeasurementParam ::=            SEQUENCE {
    satelliteID                         INTEGER (0..63),
    c-N0                                INTEGER (0..63),
    doppler                             INTEGER (-32768..32768),
    wholeGPS-Chips                      INTEGER (0..1023),
    fractionalGPS-Chips                 INTEGER (0..1023),
    multipathIndicator                  MultipathIndicator,
    pseudorangeRMS-Error                INTEGER (0..63)
}

GPS-MeasurementParamList ::=        SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-MeasurementParam

GSM-CarrierRSSI ::=                 BIT STRING (SIZE (6))


GSM-MeasuredResults ::=             SEQUENCE {
    gsm-CarrierRSSI                     GSM-CarrierRSSI                     OPTIONAL,
    pathloss                            Pathloss                            OPTIONAL,
    bsicReported                        BSICReported,
    observedTimeDifferenceToGSM         ObservedTimeDifferenceToGSM         OPTIONAL
}

GSM-MeasuredResultsList ::=         SEQUENCE (SIZE (1..maxReportedGSMCells)) OF
                                        GSM-MeasuredResults

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

GPS-TOW-1msec ::=                   INTEGER (0..604799999)

GPS-TOW-1usec ::=                   SEQUENCE {
    tow-1msec                           GPS-TOW-1msec,
    tow-rem-usec                        GPS-TOW-rem-usec
}

GPS-TOW-Assist ::=                  SEQUENCE {
    satID                               SatID,
    tlm-Message                         BIT STRING (SIZE (14)),
    antiSpoof                           BOOLEAN,
    alert                               BOOLEAN,
    tlm-Reserved                        BIT STRING (SIZE (2))
}

GPS-TOW-AssistList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-TOW-Assist

GPS-TOW-rem-usec ::=                INTEGER (0..999)

HCS-CellReselectInformation-RSCP ::=        SEQUENCE {
    penaltyTime                                 PenaltyTime-RSCP
    -- TABULAR: The default value is "notUsed", temporary offset is nested inside PenaltyTime
}

HCS-CellReselectInformation-ECN0 ::=        SEQUENCE {
    penaltyTime                         PenaltyTime-ECN0
    -- TABULAR: The default value is "notUsed", temporary offset is nested inside PenaltyTime
```

```
}

HCS-NeighbouringCellInformation-RSCP ::= SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    hcs-CellReselectInformation         HCS-CellReselectInformation-RSCP
}

HCS-NeighbouringCellInformation-ECN0 ::= SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    hcs-CellReselectInformation         HCS-CellReselectInformation-ECN0
}

HCS-PRIO ::=                        INTEGER (0..7)

HCS-ServingCellInformation ::=      SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    t-CR-Max                            T-CRMax                             OPTIONAL
}

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

-- Actual value = IE value * 0.5
HysteresisInterFreq ::=             INTEGER (0..29)

InterFreqCell ::=                   SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults
}

InterFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

InterFreqCellInfoList ::=           SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList                OPTIONAL
}

InterFreqCellInfoSI-List-RSCP ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-RSCP        OPTIONAL
}

InterFreqCellInfoSI-List-ECN0 ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-ECN0        OPTIONAL
}

InterFreqCellInfoSI-List-HCS-RSCP ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-RSCP    OPTIONAL
}
InterFreqCellInfoSI-List-HCS-ECN0 ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-ECN0    OPTIONAL
}

InterFreqCellList ::=               SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqCell

InterFreqCellMeasuredResultsList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellMeasuredResults

InterFreqEvent ::=                  CHOICE {
    event2a                             Event2a,
    event2b                             Event2b,
    event2c                             Event2c,
    event2d                             Event2d,
    event2e                             Event2e,
    event2f                             Event2f
}

InterFreqEventList ::=              SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        InterFreqEvent


InterFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList                   OPTIONAL
}
```

```
InterFreqMeasQuantity ::=           SEQUENCE {
    reportingCriteria                   CHOICE {
        intraFreqReportingCriteria          SEQUENCE {
            intraFreqMeasQuantity               IntraFreqMeasQuantity
        },
        interFreqReportingCriteria          SEQUENCE {
            filterCoefficient                   FilterCoefficient           DEFAULT fc0,
            modeSpecificInfo                    CHOICE {
                fdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-FDD     FreqQualityEstimateQuantity-FDD
                },
                tdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-TDD     FreqQualityEstimateQuantity-TDD
                }
            }
        }
    }
}

InterFreqMeasuredResults ::=        SEQUENCE {
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    utra-CarrierRSSI                    UTRA-CarrierRSSI                    OPTIONAL,
    interFreqCellMeasuredResultsList    InterFreqCellMeasuredResultsList    OPTIONAL
}

InterFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqMeasuredResults


InterFreqMeasurementSysInfo-RSCP ::=    SEQUENCE {
    interFreqCellInfoSI-List                InterFreqCellInfoSI-List-RSCP       OPTIONAL
}

InterFreqMeasurementSysInfo-ECN0 ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-ECN0       OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-RSCP ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-RSCP   OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-ECN0 ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-ECN0   OPTIONAL
}

InterFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    interFreqReportingCriteria          InterFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterFreqReportingCriteria ::=      SEQUENCE {
    interFreqEventList                  InterFreqEventList                  OPTIONAL
}

InterFreqReportingQuantity ::=      SEQUENCE {
    utra-Carrier-RSSI                   BOOLEAN,
    frequencyQualityEstimate            BOOLEAN,
    nonFreqRelatedQuantities            CellReportingQuantities
}

InterFrequencyMeasurement ::=       SEQUENCE {
    interFreqCellInfoList               InterFreqCellInfoList,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingQuantity          InterFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    interFreqSetUpdate                  UE-AutonomousUpdateMode             OPTIONAL,
    reportCriteria                      InterFreqReportCriteria
}
InterRAT-TargetCellDescription::=   SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            ncMode                              NC-Mode             OPTIONAL
        },
        is-2000                             NULL,
        spare                               NULL
    }
}
```

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

InterRATCellInfoList ::=            SEQUENCE {
    removedInterRATCellList         RemovedInterRATCellList,
    newInterRATCellList             NewInterRATCellList
}

InterRATCellInfoList-HCS ::=            SEQUENCE {
    removedInterRATCellList         RemovedInterRATCellList,
    newInterRATCellList             NewInterRATCellList-HCS
}

InterRATEvent ::=               CHOICE {
    event3a                             Event3a,
    event3b                             Event3b,
    event3c                             Event3c,
    event3d                             Event3d
}

InterRATEventList ::=           SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        InterRATEvent

InterRATEventResults ::=            SEQUENCE {
    eventID                             EventIDInterRAT,
    cellToReportList                    CellToReportList
}

InterRATInfo ::=                    ENUMERATED {
                                        gsm }

InterRATMeasQuantity ::=                SEQUENCE {
    measQuantityUTRAN-QualityEstimate       IntraFreqMeasQuantity           OPTIONAL,
    ratSpecificInfo                     CHOICE {
        gsm                                     SEQUENCE {
            measurementQuantity                     MeasurementQuantityGSM,
            filterCoefficient                       FilterCoefficient       DEFAULT fc1,
            bsic-VerificationRequired               BSIC-VerificationRequired
        },
        is-2000                                 SEQUENCE {
            tadd-EcIo                               INTEGER (0..63),
            tcomp-EcIo                              INTEGER (0..15),
            softSlope                               INTEGER (0..63)         OPTIONAL,
            addIntercept                            INTEGER (0..63)         OPTIONAL
        }
    }
}

InterRATMeasuredResults ::=     CHOICE {
    gsm                                 GSM-MeasuredResultsList,
    spare                               NULL
}

InterRATMeasuredResultsList ::= SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                        InterRATMeasuredResults

InterRATMeasurement ::=         SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList                OPTIONAL,
    interRATMeasQuantity                InterRATMeasQuantity                OPTIONAL,
    interRATReportingQuantity           InterRATReportingQuantity       OPTIONAL,
    reportCriteria                      InterRATReportCriteria
}

InterRATMeasurementSysInfo ::=  SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList                OPTIONAL
}

InterRATMeasurementSysInfo-HCS ::=  SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList-HCS            OPTIONAL
}

InterRATReportCriteria ::=      CHOICE {
    interRATReportingCriteria           InterRATReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterRATReportingCriteria ::=   SEQUENCE {
    interRATEventList               InterRATEventList               OPTIONAL
}

InterRATReportingQuantity ::=   SEQUENCE {
    utran-EstimatedQuality              BOOLEAN,
    ratSpecificInfo                 CHOICE {
```

```
        gsm                                 SEQUENCE {
            pathloss                            BOOLEAN,
            observedTimeDifferenceGSM           BOOLEAN,
            gsm-Carrier-RSSI                    BOOLEAN
        }
    }
}

IntraFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

IntraFreqCellInfoList ::=           SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList                OPTIONAL
}

IntraFreqCellInfoSI-List-RSCP ::=   SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-RSCP
}

IntraFreqCellInfoSI-List-ECN0 ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-ECN0
}

IntraFreqCellInfoSI-List-HCS-RSCP ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-RSCP
}

IntraFreqCellInfoSI-List-HCS-ECN0 ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-ECN0
}

IntraFreqEvent ::=                  CHOICE {
    e1a                                 Event1a,
    e1b                                 Event1b,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEventCriteria ::=          SEQUENCE {
    event                               IntraFreqEvent,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteriaList ::=      SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria

IntraFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDIntraFreq,
    cellMeasurementEventResults         CellMeasurementEventResults
}

IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT fc1,
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
            intraFreqMeasQuantity-FDD       IntraFreqMeasQuantity-FDD
        },
        tdd                             SEQUENCE {
            intraFreqMeasQuantity-TDDList   IntraFreqMeasQuantity-TDDList
        }
    }
}

IntraFreqMeasQuantity-FDD ::=       ENUMERATED {
                                        cpich-Ec-NO,
                                        cpich-RSCP,
                                        pathloss,
                                        utra-CarrierRSSI }

IntraFreqMeasQuantity-TDD ::=       ENUMERATED {
                                        primaryCCPCH-RSCP,
                                        pathloss,
```

```
                                        timeslotISCP,
                                        utra-CarrierRSSI }

IntraFreqMeasQuantity-TDDList ::=   SEQUENCE (SIZE (1..4)) OF
                                        IntraFreqMeasQuantity-TDD

IntraFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellMeasuredResults

IntraFreqMeasurementSysInfo-RSCP ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-RSCP       OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-ECN0 ::=        SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-ECN0       OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-RSCP ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-RSCP   OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-ECN0 ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-ECN0   OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

IntraFreqReportingCriteria ::=      SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList      OPTIONAL
}

IntraFreqReportingQuantity ::=      SEQUENCE {
    activeSetReportingQuantities        CellReportingQuantities,
    monitoredSetReportingQuantities     CellReportingQuantities,
    detectedSetReportingQuantities      CellReportingQuantities             OPTIONAL
}

IntraFreqReportingQuantityForRACH ::= SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-FDD        IntraFreqRepQuantityRACH-FDD
        },
        tdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-TDDList    IntraFreqRepQuantityRACH-TDDList
        }
    }
}

IntraFreqRepQuantityRACH-FDD ::=    ENUMERATED {
                                        cpich-EcN0, cpich-RSCP,
                                        pathloss, noReport }

IntraFreqRepQuantityRACH-TDD ::=    ENUMERATED {
                                        timeslotISCP,
                                        primaryCCPCH-RSCP,
                                        noReport }

IntraFreqRepQuantityRACH-TDDList ::= SEQUENCE (SIZE (1..2)) OF
```

```
                                    IntraFreqRepQuantityRACH-TDD

IntraFrequencyMeasurement ::=       SEQUENCE {
    intraFreqCellInfoList               IntraFreqCellInfoList               OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantity          IntraFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      IntraFreqReportCriteria             OPTIONAL
}

IODE ::=                            INTEGER (0..255)

IP-Length ::=                       ENUMERATED {
                                        ipl5, ipl10 }

IP-Spacing ::=                      ENUMERATED {
                                        e5, e7, e10, e15, e20,
                                        e30, e40, e50 }

IS-2000SpecificMeasInfo ::=         ENUMERATED {
                                        frequency, timeslot, colourcode,
                                        outputpower, pn-Offset }

MaxNumberOfReportingCellsType1 ::=  ENUMERATED {
                                        e1, e2, e3, e4, e5, e6}

MaxNumberOfReportingCellsType2 ::=  ENUMERATED {
                                        e1, e2, e3, e4, e5, e6, e7, e8, e9, e10, e11, e12}

MaxNumberOfReportingCellsType3 ::=  ENUMERATED {
                                        viactCellsPlus1,
                                        viactCellsPlus2,
                                        viactCellsPlus3,
                                        viactCellsPlus4,
                                        viactCellsPlus5,
                                        viactCellsPlus6 }

MaxReportedCellsOnRACH ::=          ENUMERATED {
                                        noReport,
                                        currentCell,
                                        currentAnd-1-BestNeighbour,
                                        currentAnd-2-BestNeighbour,
                                        currentAnd-3-BestNeighbour,
                                        currentAnd-4-BestNeighbour,
                                        currentAnd-5-BestNeighbour,
                                        currentAnd-6-BestNeighbour }

MeasuredResults ::=                 CHOICE {
    intraFreqMeasuredResultsList        IntraFreqMeasuredResultsList,
    interFreqMeasuredResultsList        InterFreqMeasuredResultsList,
    interRATMeasuredResultsList     InterRATMeasuredResultsList,
    trafficVolumeMeasuredResultsList    TrafficVolumeMeasuredResultsList,
    qualityMeasuredResults              QualityMeasuredResults,
    ue-InternalMeasuredResults          UE-InternalMeasuredResults,
    up-MeasuredResults                  UP-MeasuredResults
}

MeasuredResultsList ::=             SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults

MeasuredResultsOnRACH ::=           SEQUENCE {
    currentCell                         SEQUENCE {
        modeSpecificInfo                    CHOICE {
            fdd                                 SEQUENCE {
                measurementQuantity                 CHOICE {
                    cpich-Ec-N0                         CPICH-Ec-N0,
                    cpich-RSCP                          CPICH-RSCP,
                    pathloss                            Pathloss
                }
            },
            tdd                                 SEQUENCE {
                timeslotISCP                        TimeslotISCP-List       OPTIONAL,
                primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP       OPTIONAL
            }
        }
    },
    monitoredCells                      MonitoredCellRACH-List              OPTIONAL
}

MeasurementCommand ::=              CHOICE {
    setup                               MeasurementType,
    modify                              SEQUENCE {
        measurementType                     MeasurementType                 OPTIONAL
```

```
    },
    release                             NULL
}

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

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

MeasurementIdentity ::=     INTEGER (1..16)

MeasurementQuantityGSM ::=          ENUMERATED {
                                        gsm-CarrierRSSI,
                                        pathloss }

MeasurementReportingMode ::=        SEQUENCE {
    measurementReportTransferMode       TransferMode,
    periodicalOrEventTrigger            PeriodicalOrEventTrigger
}

MeasurementType ::=                 CHOICE {
    intraFrequencyMeasurement           IntraFrequencyMeasurement,
    interFrequencyMeasurement           InterFrequencyMeasurement,
    interRATMeasurement             InterRATMeasurement,
    up-Measurement                      UP-Measurement,
    trafficVolumeMeasurement            TrafficVolumeMeasurement,
    qualityMeasurement                  QualityMeasurement,
    ue-InternalMeasurement              UE-InternalMeasurement
}

MeasurementValidity ::=             SEQUENCE {
    ue-State                            ENUMERATED {
                                            cell-DCH, all-But-Cell-DCH, all-States }
}

MonitoredCellRACH-List ::=          SEQUENCE (SIZE (1..7)) OF
                                        MonitoredCellRACH-Result

MonitoredCellRACH-Result ::=        SEQUENCE {
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            measurementQuantity                 CHOICE {
                cpich-Ec-N0                         CPICH-Ec-N0,
                cpich-RSCP                          CPICH-RSCP,
                pathloss                            Pathloss
            }                                                           OPTIONAL
        },
```

```
        tdd                                 SEQUENCE {
            cellParametersID                    CellParametersID,
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP
        }
    }
}

MultipathIndicator ::=              ENUMERATED {
                                        nm,
                                        low,
                                        medium,
                                        high }

N-CR-T-CRMaxHyst ::=                SEQUENCE {
    n-CR                                INTEGER (1..16)                     DEFAULT 8,
    t-CRMaxHyst                         T-CRMaxHyst
}

NavigationModelSatInfo ::=          SEQUENCE {
    satID                               SatID,
    satelliteStatus                     SatelliteStatus,
    navModel                            NavModel
}

NavigationModelSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        NavigationModelSatInfo

NavModel ::=                        SEQUENCE {
    codeOnL2                            BIT STRING (SIZE (2)),
    uraIndex                            BIT STRING (SIZE (4)),
    satHealth                           BIT STRING (SIZE (6)),
    iodc                                BIT STRING (SIZE (10)),
    l2Pflag                             BIT STRING (SIZE (1)),
    sf1Revd                             SubFrame1Reserved,
    t-GD                                BIT STRING (SIZE (8)),
    t-oc                                BIT STRING (SIZE (16)),
    af2                                 BIT STRING (SIZE (8)),
    af1                                 BIT STRING (SIZE (16)),
    af0                                 BIT STRING (SIZE (22)),
    c-rs                                BIT STRING (SIZE (16)),
    delta-n                             BIT STRING (SIZE (16)),
    m0                                  BIT STRING (SIZE (32)),
    c-uc                                BIT STRING (SIZE (16)),
    e                                   BIT STRING (SIZE (32)),
    c-us                                BIT STRING (SIZE (16)),
    a-Sqrt                              BIT STRING (SIZE (32)),
    t-oe                                BIT STRING (SIZE (16)),
    fitInterval                         BIT STRING (SIZE (1)),
    aodo                                BIT STRING (SIZE (5)),
    c-ic                                BIT STRING (SIZE (16)),
    omega0                              BIT STRING (SIZE (32)),
    c-is                                BIT STRING (SIZE (16)),
    i0                                  BIT STRING (SIZE (32)),
    c-rc                                BIT STRING (SIZE (16)),
    omega                               BIT STRING (SIZE (32)),
    omegaDot                            BIT STRING (SIZE (24)),
    iDot                                BIT STRING (SIZE (14))
}
NC-Mode::=                          BIT STRING (SIZE (3))

Neighbour ::=                       SEQUENCE {
    neighbourIdentity                   PrimaryCPICH-Info                   OPTIONAL,
    neignbourQuantity                   NeighbourQuantity,
    sfn-SFN-ObsTimeDifference2          SFN-SFN-ObsTimeDifference2
}

NeighbourList ::=                   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        Neighbour

-- **TODO**, to be defined fully
NeighbourQuantity ::=               SEQUENCE {
}

NewInterFreqCell ::=                SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfo
}

NewInterFreqCellList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCell

NewInterFreqCellSI-RSCP ::=             SEQUENCE {
```

```
    interFreqCellID                    InterFreqCellID                     OPTIONAL,
    frequencyInfo                      FrequencyInfo                       OPTIONAL,
    cellInfo                           CellInfoSI-RSCP
}

NewInterFreqCellSI-ECN0 ::=            SEQUENCE {
    interFreqCellID                    InterFreqCellID                     OPTIONAL,
    frequencyInfo                      FrequencyInfo                       OPTIONAL,
    cellInfo                           CellInfoSI-ECN0
}

NewInterFreqCellSI-HCS-RSCP ::=            SEQUENCE {
    interFreqCellID                    InterFreqCellID                     OPTIONAL,
    frequencyInfo                      FrequencyInfo                       OPTIONAL,
    cellInfo                           CellInfoSI-HCS-RSCP
}

NewInterFreqCellSI-HCS-ECN0 ::=            SEQUENCE {
    interFreqCellID                    InterFreqCellID                     OPTIONAL,
    frequencyInfo                      FrequencyInfo                       OPTIONAL,
    cellInfo                           CellInfoSI-HCS-ECN0
}

NewInterFreqCellSI-List-ECN0 ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewInterFreqCellSI-ECN0

NewInterFreqCellSI-List-HCS-RSCP ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewInterFreqCellSI-HCS-RSCP

NewInterFreqCellSI-List-HCS-ECN0 ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewInterFreqCellSI-HCS-ECN0

NewInterFreqCellSI-List-RSCP ::=       SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewInterFreqCellSI-RSCP

NewInterRATCell ::=                SEQUENCE {
    interRATCellID                     InterRATCellID          OPTIONAL,
    technologySpecificInfo             CHOICE {
        gsm                                SEQUENCE {
            cellSelectionReselectionInfo       CellSelectReselectInfoSIB-11-12     OPTIONAL,
            bsic                               BSIC,
            bcch-ARFCN                         BCCH-ARFCN,
            gsm-OutputPower                    GSM-OutputPower             OPTIONAL
        },
        is-2000                            SEQUENCE {
            is-2000SpecificMeasInfo            IS-2000SpecificMeasInfo
        },
        spare1                             NULL,
        spare2                             NULL
    }
}

NewInterRATCell-HCS ::=                SEQUENCE {
    interRATCellID                     InterRATCellID              OPTIONAL,
    technologySpecificInfo             CHOICE {
        gsm                                SEQUENCE {
            cellSelectionReselectionInfo       CellSelectReselectInfoSIB-11-12     OPTIONAL,
            bsic                               BSIC,
            bcch-ARFCN                         BCCH-ARFCN,
            gsm-OutputPower                    GSM-OutputPower             OPTIONAL
        },
        is-2000                            SEQUENCE {
            is-2000SpecificMeasInfo            IS-2000SpecificMeasInfo
        },
        spare1                             NULL,
        spare2                             NULL
    }
}

NewInterRATCellList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewInterRATCell

NewInterRATCellList-HCS ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewInterRATCell-HCS

NewIntraFreqCell ::=                   SEQUENCE {
    intraFreqCellID                    IntraFreqCellID                     OPTIONAL,
    cellInfo                           CellInfo
}

NewIntraFreqCellList ::=               SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewIntraFreqCell
```

```
NewIntraFreqCellSI-RSCP ::=            SEQUENCE {
    intraFreqCellID                    IntraFreqCellID                     OPTIONAL,
    cellInfo                           CellInfoSI-RSCP
}

NewIntraFreqCellSI-ECN0 ::=        SEQUENCE {
    intraFreqCellID                    IntraFreqCellID                     OPTIONAL,
    cellInfo                           CellInfoSI-ECN0
}
NewIntraFreqCellSI-HCS-RSCP ::=    SEQUENCE {
    intraFreqCellID                    IntraFreqCellID                     OPTIONAL,
    cellInfo                           CellInfoSI-HCS-RSCP
}

NewIntraFreqCellSI-HCS-ECN0 ::=    SEQUENCE {
    intraFreqCellID                    IntraFreqCellID                     OPTIONAL,
    cellInfo                           CellInfoSI-HCS-ECN0
}

NewIntraFreqCellSI-List-RSCP ::=       SEQUENCE (SIZE (1..maxCellMeas)) OF
                                           NewIntraFreqCellSI-RSCP

NewIntraFreqCellSI-List-ECN0 ::=       SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewIntraFreqCellSI-ECN0

NewIntraFreqCellSI-List-HCS-RSCP ::=   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewIntraFreqCellSI-HCS-RSCP

NewIntraFreqCellSI-List-HCS-ECN0 ::=   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewIntraFreqCellSI-HCS-ECN0

NodeB-ClockDrift ::=               INTEGER (0..15)

NonUsedFreqParameter ::=           SEQUENCE {
    nonUsedFreqThreshold               Threshold,
    nonUsedFreqW                       W
}

NonUsedFreqParameterList ::=       SEQUENCE (SIZE (1..maxFreq)) OF
                                       NonUsedFreqParameter

ObservedTimeDifferenceToGSM ::=    INTEGER (0..4095)

OTDOA-SearchWindowSize ::=         ENUMERATED {
                                       c10, c20, c30, c40, c50,
                                       c60, c70, moreThan70 }

Pathloss ::=                       INTEGER (46..158)

PenaltyTime-RSCP ::=               CHOICE {
    notUsed                            NULL,
    pt10                               TemporaryOffset,
    pt20                               TemporaryOffset,
    pt30                               TemporaryOffset,
    pt40                               TemporaryOffset,
    pt50                               TemporaryOffset,
    pt60                               TemporaryOffset
}

PenaltyTime-ECN0 ::=               CHOICE {
    notUsed                            NULL,
    pt10                               TemporaryOffsetList,
    pt20                               TemporaryOffsetList,
    pt30                               TemporaryOffsetList,
    pt40                               TemporaryOffsetList,
    pt50                               TemporaryOffsetList,
    pt60                               TemporaryOffsetList
}

PendingTimeAfterTrigger ::=        ENUMERATED {
                                       ptat0-25, ptat0-5, ptat1,
                                       ptat2, ptat4, ptat8, ptat16 }

PeriodicalOrEventTrigger ::=       ENUMERATED {
                                       periodical,
                                       eventTrigger }

PeriodicalReportingCriteria ::=    SEQUENCE {
    reportingAmount                    ReportingAmount                 DEFAULT ra-Infinity,
    reportingInterval                  ReportingIntervalLong
}

PeriodicalWithReportingCellStatus ::= SEQUENCE {
```

```
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

PositionEstimate ::=                CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointUncertCircle          EllipsoidPointUncertCircle,
    ellipsoidPointUncertEllipse         EllipsoidPointUncertEllipse,
    ellipsoidPointAltitude              EllipsoidPointAltitude,
    ellipsoidPointAltitudeEllipse       EllipsoidPointAltitudeEllipse
}

PositioningMethod ::=               ENUMERATED {
                                        otdoa,
                                        gps,
                                        otdoaOrGPS }

PRC ::=                             INTEGER (-2047..2047)


PrimaryCCPCH-RSCP ::=               INTEGER (-115..-25)

Q-HCS ::=                           INTEGER (0..99)

Q-OffsetS-N ::=                     INTEGER (-50..50)

Q-QualMin ::=                       INTEGER (-20..0)

-- Actual value = (IE value * 2) + 1
Q-RxlevMin ::=                      INTEGER (-58..-13)

QualityEventResults ::=             SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

QualityMeasuredResults ::=          SEQUENCE {
    blerMeasurementResultsList          BLER-MeasurementResultsList         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            sir-MeasurementResults              SIR-MeasurementList         OPTIONAL
        }
    }
}

QualityMeasurement ::=              SEQUENCE {
    qualityReportingQuantity            QualityReportingQuantity            OPTIONAL,
    reportCriteria                      QualityReportCriteria
}

QualityReportCriteria ::=           CHOICE {
    qualityReportingCriteria            QualityReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

QualityReportingCriteria ::=        SEQUENCE (SIZE (1..maxTrCH)) OF
                                        QualityReportingCriteriaSingle

QualityReportingCriteriaSingle ::=  SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    totalCRC                            INTEGER (1..512),
    badCRC                              INTEGER (1..512),
    pendingAfterTrigger                 INTEGER (1..512)
}

QualityReportingQuantity ::=        SEQUENCE {
    dl-TransChBLER                      BOOLEAN,
    bler-dl-TransChIdList               BLER-TransChIdList                  OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            sir-TFCS-List                       SIR-TFCS-List               OPTIONAL
        }
    }
}

QualityType ::=                     ENUMERATED {
                                        std-10, std-50, cpich-Ec-N0 }

RAT-Type ::=                        ENUMERATED {
                                        gsm, is2000 }

ReferenceCellPosition ::=           CHOICE {
```

```
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointWithAltitude          EllipsoidPointAltitude
}

ReferenceCellRelation ::=           ENUMERATED {
                                        first-12-second-3,
                                        first-13-second-2,
                                        first-1-second-23 }

-- As defined in 23.032 (2D with 24bits for each coordinate)
ReferenceLocationforSIB ::=         SEQUENCE {
    ellipsoidPoint                      EllipsoidPoint
}

ReferenceQuality ::=                ENUMERATED {
                                        m0-19, m20-39, m40-79,
                                        m80-159, m160-319, m320-639,
                                        m640-1319, m1320Plus }

-- Actual value = IE value * 10
ReferenceQuality10 ::=              INTEGER (1..32)

-- Actual value = IE value * 50
ReferenceQuality50 ::=              INTEGER (1..32)

ReferenceSFN ::=                    INTEGER (0..4095)

-- Actual value = IE value * 512
ReferenceTimeDifferenceToCell ::=   CHOICE {
    -- Actual value = IE value * 40
    accuracy40                          INTEGER (0..960),
    -- Actual value = IE value * 256
    accuracy256                         INTEGER (0..150),
    -- Actual value = IE value * 2560
    accuracy2560                        INTEGER (0..15)
}

RemovedInterFreqCellList ::=        CHOICE {
    removeAllInterFreqCells             NULL,
    removeSomeInterFreqCells            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            InterFreqCellID,
    removeNoInterFreqCells              NULL
}

RemovedInterRATCellList ::=     CHOICE {
    removeAllInterRATCells          NULL,
    removeSomeInterRATCells         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            InterRATCellID,
    removeNoInterRATCells           NULL
}

RemovedIntraFreqCellList ::=        CHOICE {
    removeAllIntraFreqCells             NULL,
    removeSomeIntraFreqCells            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            IntraFreqCellID,
    removeNoIntraFreqCells              NULL
}

ReplacementActivationThreshold ::=  ENUMERATED {
                                        notApplicable, t1, t2,
                                        t3, t4, t5, t6, t7 }

ReportDeactivationThreshold ::=     ENUMERATED {
                                        notApplicable, t1, t2,
                                        t3, t4, t5, t6, t7 }

ReportingAmount ::=                 ENUMERATED {
                                        ra1, ra2, ra4, ra8, ra16, ra32,
                                        ra64, ra-Infinity }

ReportingCellStatus ::=             CHOICE{
    withinActiveSet                     MaxNumberOfReportingCellsType1,
    withinMonitoredSetUsedFreq          MaxNumberOfReportingCellsType1,
    withinActiveAndOrMonitoredUsedFreq  MaxNumberOfReportingCellsType1,
    withinDetectedSetUsedFreq           MaxNumberOfReportingCellsType1,
    withinMonitoredAndOrDetectedUsedFreq
                                        MaxNumberOfReportingCellsType1,
    allActiveplusMonitoredSet           MaxNumberOfReportingCellsType3,
    allActivePlusDetectedSet            MaxNumberOfReportingCellsType3,
    allActivePlusMonitoredAndOrDetectedSet
                                        MaxNumberOfReportingCellsType3,
    withinVirtualActSet             MaxNumberOfReportingCellsType1,
    withinMonitoredSetNonUsedFreq       MaxNumberOfReportingCellsType1,
```

```
    withinMonitoredAndOrActiveSetNonUsedFreq
                                        MaxNumberOfReportingCellsType1,
    allVirtualActSetplusMonitoredSetNonUsedFreq
                                        MaxNumberOfReportingCellsType3,
    withinActSetOrVirtualActSet         MaxNumberOfReportingCellsType2,
    withinActSetAndOrMonitoredUsedFreqOrMonitoredNonUsedFreq
                                        MaxNumberOfReportingCellsType2
}

ReportingCellStatusOpt ::=          SEQUENCE {
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}


ReportingInfoForCellDCH ::=         SEQUENCE {
    intraFreqReportingQuantity          IntraFreqReportingQuantity,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteria                      CellDCH-ReportCriteria
}

ReportingInterval ::=               ENUMERATED {
                                        noPeriodicalreporting, ri0-25,
                                        ri0-5, ri1, ri2, ri4, ri8, ri16 }

ReportingIntervalLong ::=           ENUMERATED {
                                        ril0, ril0-25, ril0-5, ril1,
                                        ril2, ril3, ril4, ril6, ril8,
                                        ril12, ril16, ril20, ril24,
                                        ril28, ril32, ril64 }

-- Actual value = IE value * 0.5
ReportingRange ::=                  INTEGER (0..29)

RL-AdditionInfoList ::=             SEQUENCE (SIZE (1..maxRL)) OF
                                        PrimaryCPICH-Info

RL-InformationLists ::=             SEQUENCE {
    rl-AdditionInfoList                 RL-AdditionInfoList                 OPTIONAL,
    rl-RemovalInfoList                  RL-RemovalInfoList                  OPTIONAL
}

RL-RemovalInfoList ::=              SEQUENCE (SIZE (1..maxRL)) OF
                                        PrimaryCPICH-Info

RLC-BuffersPayload ::=              ENUMERATED {
                                        pl0, pl4, pl8, pl16, pl32, pl64, pl128,
                                        pl256, pl512, pl1024, pl2k, pl4k,
                                        pl8k, pl16k, pl32k, pl64k, pl128k,
                                        pl256k, pl512k, pl1024k }

RRC ::=                             INTEGER (-127..127)

SatelliteStatus ::=                 ENUMERATED {
                                        ns-NN-U,
                                        es-SN,
                                        es-NN-U,
                                        es-NN-C }

SatID ::=                           INTEGER (0..63)

SFN-SFN-ObsTimeDifference ::=       CHOICE {
    type1                               SFN-SFN-ObsTimeDifference1,
    -- Actual value for type2 = IE value * 0.0625 - 1280
    type2                               SFN-SFN-ObsTimeDifference2
}

SFN-SFN-ObsTimeDifference1 ::=      INTEGER (0..9830399)

SFN-SFN-ObsTimeDifference2 ::=      INTEGER (0..40961)

SFN-SFN-OTD-Type ::=                ENUMERATED {
                                        noReport,
                                        type1,
                                        type2 }

SIR ::=                             INTEGER (-10..20)


SIR-MeasurementList ::=             SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        SIR-MeasurementResults


SIR-MeasurementResults ::=          SEQUENCE {
```

```
    tfcs-ID                             TFCS-IdentityPlain,
    sir-TimeslotList                    SIR-TimeslotList
}

SIR-TFCS ::=                        TFCS-IdentityPlain


SIR-TFCS-List ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        SIR-TFCS

SIR-TimeslotList ::=                SEQUENCE (SIZE (1..maxTS)) OF
                                        SIR

-- Reserved bits in subframe 1 of the GPS navigation message
SubFrame1Reserved ::=               SEQUENCE {
    reserved1                           BIT STRING (SIZE (23)),
    reserved2                           BIT STRING (SIZE (24)),
    reserved3                           BIT STRING (SIZE (24)),
    reserved4                           BIT STRING (SIZE (16))
}

T-CRMax ::=                         CHOICE {
    notUsed                             NULL,
    t30                                 N-CR-T-CRMaxHyst,
    t60                                 N-CR-T-CRMaxHyst,
    t120                                N-CR-T-CRMaxHyst,
    t180                                N-CR-T-CRMaxHyst,
    t240                                N-CR-T-CRMaxHyst
}

T-CRMaxHyst ::=                     ENUMERATED {
                                        notUsed, t10, t20, t30,
                                        t40, t50, t60, t70 }

TemporaryOffset ::=                 ENUMERATED {
                                        to10, to20, to30, to40, to50,
                                        to60, to70, infinite }

TemporaryOffsetList ::=             SEQUENCE    {
        temporaryOffset1                TemporaryOffset,
        temporaryOffset2                TemporaryOffset
}

Threshold ::=                       INTEGER (-115..0)

ThresholdPositionChange ::=         ENUMERATED {
                                        pc10, pc20, pc30, pc40, pc50,
                                        pc100, pc200, pc300, pc500,
                                        pc1000, pc2000, pc5000, pc10000,
                                        pc20000, pc50000, pc100000 }

ThresholdSFN-GPS-TOW ::=            ENUMERATED {
                                        ms1, ms2, ms3, ms5, ms10,
                                        ms20, ms50, ms100 }

ThresholdSFN-SFN-Change ::=         ENUMERATED {
                                        c0-25, c0-5, c1, c2, c3, c4, c5,
                                        c10, c20, c50, c100, c200, c500,
                                        c1000, c2000, c5000 }

ThresholdUsedFrequency ::=          INTEGER (-115..165)


-- Actual value = IE value * 20.
TimeInterval ::=                    INTEGER (1..13)


TimeslotInfo ::=                    SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    burstType                           BurstType
}

TimeslotInfoList ::=                SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotInfo

TimeslotISCP ::=                    INTEGER (-115..-25)


TimeslotISCP-List ::=               SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotISCP

TimeslotListWithISCP ::=            SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotWithISCP
```

```
TimeslotWithISCP ::=                SEQUENCE {
    timeslot                            TimeslotNumber,
    timeslotISCP                        TimeslotISCP
}

TimeToTrigger ::=                   ENUMERATED {
                                        ttt0, ttt10, ttt20, ttt40, ttt60,
                                        ttt80, ttt100, ttt120, ttt160,
                                        ttt200, ttt240, tt320, ttt640,
                                        ttt1280, ttt2560, ttt5000 }

TrafficVolumeEventParam ::=         SEQUENCE {
    eventID                             TrafficVolumeEventType,
    reportingThreshold                  TrafficVolumeThreshold,
    timeToTrigger                       TimeToTrigger                       OPTIONAL,
    pendingTimeAfterTrigger             PendingTimeAfterTrigger             OPTIONAL,
    tx-InterruptionAfterTrigger         TX-InterruptionAfterTrigger         OPTIONAL
}

TrafficVolumeEventResults ::=       SEQUENCE {
    ul-transportChannelCausingEvent     TransportChannelIdentity,
    trafficVolumeEventIdentity          TrafficVolumeEventType
}

TrafficVolumeEventType ::=          ENUMERATED {
                                        e4a,
                                        e4b }

TrafficVolumeMeasQuantity ::=       CHOICE {
    rlc-BufferPayload                   NULL,
    averageRLC-BufferPayload            TimeInterval,
    varianceOfRLC-BufferPayload         TimeInterval
}

TrafficVolumeMeasSysInfo ::=        SEQUENCE {
    trafficVolumeMeasurementID          MeasurementIdentity         DEFAULT 4,
    trafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    trafficVolumeMeasRepCriteria        TrafficVolumeReportingCriteria      OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteriaSysInf                TrafficVolumeReportCriteriaSysInfo

}

TrafficVolumeMeasuredResults ::=    SEQUENCE {
    rb-Identity                         RB-Identity,
    rlc-BuffersPayload                  RLC-BuffersPayload                  OPTIONAL,
    averageRLC-BufferPayload            AverageRLC-BufferPayload            OPTIONAL,
    varianceOfRLC-BufferPayload         VarianceOfRLC-BufferPayload         OPTIONAL
}

TrafficVolumeMeasuredResultsList ::= SEQUENCE (SIZE (1..maxRB)) OF
                                        TrafficVolumeMeasuredResults

TrafficVolumeMeasurement ::=        SEQUENCE {
    trafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      TrafficVolumeReportCriteria
}

TrafficVolumeMeasurementObjectList ::= SEQUENCE (SIZE (1..maxTrCH)) OF
                                            TransportChannelIdentity

TrafficVolumeReportCriteria ::=     CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

TrafficVolumeReportCriteriaSysInfo ::=  CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    transChCriteriaList                 TransChCriteriaList                 OPTIONAL
}
```

```
TrafficVolumeReportingQuantity ::= SEQUENCE {
    rlc-RB-BufferPayload                BOOLEAN,
    rlc-RB-BufferPayloadAverage         BOOLEAN,
    rlc-RB-BufferPayloadVariance        BOOLEAN
}

TrafficVolumeThreshold ::=          ENUMERATED {
                                        th8, th16, th32, th64, th128,
                                        th256, th512, th1024, th2k, th3k,
                                        th4k, th6k, th8k, th12k, th16k,
                                        th24k, th32k, th48k, th64k, th96k,
                                        th128k, th192k, th256k, th384k,
                                        th512k, th768k }

TransChCriteria ::=                 SEQUENCE {
    ul-transportChannelID               TransportChannelIdentity        OPTIONAL,
    eventSpecificParameters             SEQUENCE (SIZE (1..maxMeasParEvent)) OF
                                            TrafficVolumeEventParam         OPTIONAL
}

TransChCriteriaList ::=         SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransChCriteria

TransferMode ::=                    ENUMERATED {
                                        acknowledgedModeRLC,
                                        unacknowledgedModeRLC }

TransmittedPowerThreshold ::=       INTEGER (-50..33)

TriggeringCondition1 ::=            ENUMERATED {
                                        activeSetCellsOnly,
                                        monitoredSetCellsOnly,
                                        activeSetAndMonitoredSetCells }

TriggeringCondition2 ::=            ENUMERATED {
                                        activeSetCellsOnly,
                                        monitoredSetCellsOnly,
                                        activeSetAndMonitoredSetCells,
                                        detectedSetCellsOnly,
                                        detectedSetAndMonitoredSetCells }

TX-InterruptionAfterTrigger ::=     ENUMERATED {
                                        txiat0-25, txiat0-5, txiat1,
                                        txiat2, txiat4, txiat8, txiat16 }

UDRE ::=                            ENUMERATED {
                                        lessThan1,
                                        between1-and-4,
                                        between4-and-8,
                                        over8 }

UE-6AB-Event ::=                    SEQUENCE {
    timeToTrigger                       TimeToTrigger,
    transmittedPowerThreshold           TransmittedPowerThreshold
}

UE-6FG-Event ::=                    SEQUENCE {
    timeToTrigger                       TimeToTrigger,
    ue-RX-TX-TimeDifferenceThreshold    UE-RX-TX-TimeDifferenceThreshold
}

UE-AutonomousUpdateMode ::=         CHOICE {
    on                                  NULL,
    onWithNoReporting                   NULL,
    off                                 RL-InformationLists
}

UE-InternalEventParam ::=           CHOICE {
    event6a                             UE-6AB-Event,
    event6b                             UE-6AB-Event,
    event6c                             TimeToTrigger,
    event6d                             TimeToTrigger,
    event6e                             TimeToTrigger,
    event6f                             UE-6FG-Event,
    event6g                             UE-6FG-Event
}

UE-InternalEventParamList ::=       SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        UE-InternalEventParam

UE-InternalEventResults ::=         CHOICE {
    event6a                             NULL,
    event6b                             NULL,
```

```
    event6c                             NULL,
    event6d                             NULL,
    event6e                             NULL,
    event6f                             PrimaryCPICH-Info,
    event6g                             PrimaryCPICH-Info
}

UE-InternalMeasQuantity ::=         SEQUENCE {
    measurementQuantity                 UE-MeasurementQuantity,
    filterCoefficient                   FilterCoefficient                   DEFAULT fc1
}

UE-InternalMeasuredResults ::=      SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-TransmittedPowerFDD              UE-TransmittedPower         OPTIONAL,
            ue-RX-TX-ReportEntryList            UE-RX-TX-ReportEntryList    OPTIONAL
        },
        tdd                                 SEQUENCE {
            ue-TransmittedPowerTDD-List         UE-TransmittedPowerTDD-List OPTIONAL,
            appliedTA                           UL-TimingAdvance            OPTIONAL
        }
    }
}

UE-InternalMeasurement ::=          SEQUENCE {
    ue-InternalMeasQuantity             UE-InternalMeasQuantity             OPTIONAL,
    ue-InternalReportingQuantity        UE-InternalReportingQuantity        OPTIONAL,
    reportCriteria                      UE-InternalReportCriteria
}

UE-InternalMeasurementSysInfo ::=   SEQUENCE {
    ue-InternalMeasurementID            MeasurementIdentity         DEFAULT 5,
    ue-InternalMeasQuantity             UE-InternalMeasQuantity
}

UE-InternalReportCriteria ::=       CHOICE {
    ue-InternalReportingCriteria        UE-InternalReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

UE-InternalReportingCriteria ::=    SEQUENCE {
    ue-InternalEventParamList           UE-InternalEventParamList           OPTIONAL
}

UE-InternalReportingQuantity ::=    SEQUENCE {
    ue-TransmittedPower                 BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-RX-TX-TimeDifferece              BOOLEAN
        },
        tdd                                 SEQUENCE {
            appliedTA                           BOOLEAN
        }
    }
}

-- TABULAR: For TDD only the first two values are used.
UE-MeasurementQuantity ::=          ENUMERATED {
                                        ue-TransmittedPower,
                                        utra-Carrier-RSSI,
                                        ue-RX-TX-TimeDifference }

UE-RX-TX-ReportEntry ::=            SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    ue-RX-TX-TimeDifferenceType1        UE-RX-TX-TimeDifferenceType1
}

UE-RX-TX-ReportEntryList ::=        SEQUENCE (SIZE (1..maxRL)) OF
                                        UE-RX-TX-ReportEntry

UE-RX-TX-TimeDifferenceType1 ::=            INTEGER (768..1280)

-- Actual value = IE value * 0.0625 + 768
UE-RX-TX-TimeDifferenceType2 ::=    INTEGER (0..8191)

UE-RX-TX-TimeDifferenceThreshold ::= INTEGER (768..1280)

UE-TransmittedPower ::=             INTEGER (-50..33)

UE-TransmittedPowerTDD-List ::=     SEQUENCE (SIZE (1..maxTS)) OF
                                        UE-TransmittedPower
```

```
UP-Accuracy ::=                 BIT STRING (SIZE (7))

--  For sfID=0 (sf4), pageNo=18, and sfID=0 & sfID=1 (sf4 & sf5), pageNo=25,
--  the IE fileds for word3 – word110 are the same as UP-GPS-IonosphericModel
--  and UP-GPS-UTC-Model. For the rest of the pages, they are the same as
--  UP-GPS-Almanac.
UP-Alma-SIB-Data ::=                    SEQUENCE {
    sfID                                INTEGER (0..1),
    dataID                              INTEGER (0..3),
    pageNo                              INTEGER (0..63),
    word3                               BIT STRING (SIZE (16)),
    word4                               BIT STRING (SIZE (24)),
    word5                               BIT STRING (SIZE (24)),
    word6                               BIT STRING (SIZE (24)),
    word7                               BIT STRING (SIZE (24)),
    word8                               BIT STRING (SIZE (24)),
    word9                               BIT STRING (SIZE (24)),
    word10                              BIT STRING (SIZE (22))
}

UP-Alma-SIB-DataList ::=            SEQUENCE (SIZE (1..3)) OF
                                        UP-Alma-SIB-Data

UP-CipherParameters ::=         SEQUENCE {
    cipheringKeyFlag                    BIT STRING (SIZE (1)),
    cipheringSerialNumber               INTEGER (0..65535)
}

UP-DGPS-SIB-Data ::=                SEQUENCE {
    nodeBClockDrift                     NodeB-ClockDrift                    OPTIONAL,
    referenceLocationforSIB ReferenceLocationforSIB,
    referenceSFN                        ReferenceSFN                        OPTIONAL,
    referenceGPS-TOW                    GPS-TOW-1usec,
    statusHealth                        DiffCorrectionStatus,
    dgps-InformationList                DGPS-InformationList
}

UP-Ephe-SIB-Data ::=                SEQUENCE {
    transmissionTOW                 INTEGER (0..1048575),
    satID                               SatID,
    tlmMessage                          BIT STRING (SIZE (14)),
    tlmRevd                             BIT STRING (SIZE (2)),
    how                                 BIT STRING (SIZE (22)),
    wn                                  BIT STRING (SIZE (10)),
    navModel                            NavModel
}

UP-Error ::=                        SEQUENCE {
    errorReason                         UP-ErrorCause,
    additionalAssistanceData            AdditionalAssistanceData
}

UP-ErrorCause ::=                   ENUMERATED {
                                        notEnoughOTDOA-Cells,
                                        notEnoughGPS-Satellites,
                                        assistanceDataMissing,
                                        methodNotSupported,
                                        undefinedError,
                                        requestDeniedByUser,
                                        notProcessedAndTimeout }

UP-EventID ::=                      ENUMERATED {
                                        e7a, e7b, e7c }

UP-EventParam ::=                   SEQUENCE {
    reportingAmount                     ReportingAmount,
    reportFirstFix                      BOOLEAN,
    measurementInterval                 UP-MeasurementInterval,
    eventSpecificInfo                   UP-EventSpecificInfo
}

UP-EventParamList ::=               SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        UP-EventParam

UP-EventSpecificInfo ::=            CHOICE {
    e7a                                 ThresholdPositionChange,
    e7b                                 ThresholdSFN-SFN-Change,
    e7c                                 ThresholdSFN-GPS-TOW
}

UP-GPS-AcquisitionAssistance ::=    SEQUENCE {
    referenceTime                       CHOICE {
```

```
        utran-ReferenceTime                 UTRAN-ReferenceTime,
        gps-ReferenceTimeOnly               INTEGER (0..604799999)
    },
    satelliteInformationList            AcquisitionSatInfoList
}

UP-GPS-Almanac ::=                  SEQUENCE {
    wn-a                                BIT STRING (SIZE (8)),
    almanacSatInfoList                  AlmanacSatInfoList
}

UP-GPS-AssistanceData ::=           SEQUENCE {
    up-GPS-ReferenceTime                UP-GPS-ReferenceTime                OPTIONAL,
    up-GPS-ReferenceLocation            EllipsoidPointAltitude              OPTIONAL,
    up-GPS-DGPS-Corrections             UP-GPS-DGPS-Corrections             OPTIONAL,
    up-GPS-NavigationModel              UP-GPS-NavigationModel              OPTIONAL,
    up-GPS-IonosphericModel             UP-GPS-IonosphericModel             OPTIONAL,
    up-GPS-UTC-Model                    UP-GPS-UTC-Model                    OPTIONAL,
    up-GPS-Almanac                      UP-GPS-Almanac                      OPTIONAL,
    up-GPS-AcquisitionAssistance        UP-GPS-AcquisitionAssistance        OPTIONAL,
    up-GPS-Real-timeIntegrity           BadSatList                          OPTIONAL
}

UP-Cipher-GPS-Data-Indicator ::=            SEQUENCE {
    up-CipherParameters             UP-CipherParameters             OPTIONAL
}

UP-GPS-DGPS-Corrections ::=     SEQUENCE {
    gps-TOW                             INTEGER (0..604799),
    statusHealth                        DiffCorrectionStatus,
    dgps-CorrectionSatInfoList          DGPS-CorrectionSatInfoList
}

UP-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))
}

UP-GPS-Measurement ::=              SEQUENCE {
    referenceSFN                        ReferenceSFN                        OPTIONAL,
    gps-TOW-1msec                       GPS-TOW-1msec,
    gps-TOW-rem-usec                    GPS-TOW-rem-usec                    OPTIONAL,
    gps-MeasurementParamList            GPS-MeasurementParamList
}

UP-GPS-NavigationModel ::=          SEQUENCE {
    n-SAT                               INTEGER (1..16),
    navigationModelSatInfoList          NavigationModelSatInfoList
}

UP-GPS-ReferenceTime ::=            SEQUENCE {
    gps-Week                            INTEGER (0..1023),
    gps-TOW                             GPS-TOW-1usec,
    sfn                                 INTEGER (0..4095),
    gps-TOW-AssistList                  GPS-TOW-AssistList                  OPTIONAL
}

UP-GPS-UTC-Model ::=                SEQUENCE {
    a1                                  BIT STRING (SIZE (24)),
    a0                                  BIT STRING (SIZE (32)),
    t-ot                                BIT STRING (SIZE (8)),
    wn-t                                BIT STRING (SIZE (8)),
    delta-t-LS                          BIT STRING (SIZE (8)),
    wn-lsf                              BIT STRING (SIZE (8)),
    dn                                  BIT STRING (SIZE (8)),
    delta-t-LSF                         BIT STRING (SIZE (8))
}

UP-IPDL-Parameters ::=              SEQUENCE {
    ip-Spacing                          IP-Spacing,
    ip-Length                           IP-Length,
    ip-Offset                           INTEGER (0..9),
    seed                                INTEGER (0..63),
    burstModeParameters                 BurstModeParameters
}

UP-MeasuredResults ::=              SEQUENCE {
```

```
    up-MultipleSets                     UP-MultipleSets                 OPTIONAL,
    up-ReferenceCellIdentity            PrimaryCPICH-Info                   OPTIONAL,
    up-OTDOA-Measurement                UP-OTDOA-Measurement                OPTIONAL,
    up-Position                         UP-Position                     OPTIONAL,
    up-GPS-Measurement                  UP-GPS-Measurement                  OPTIONAL,
    up-Error                            UP-Error                            OPTIONAL
}

UP-Measurement ::=                  SEQUENCE {
    up-ReportingQuantity                UP-ReportingQuantity,
    reportCriteria                      UP-ReportCriteria,
    up-OTDOA-AssistanceData         UP-OTDOA-AssistanceData         OPTIONAL,
    up-GPS-AssistanceData               UP-GPS-AssistanceData               OPTIONAL
}

UP-MeasurementEventResults ::=      CHOICE {
    event7a                             UP-Position,
    event7b                             UP-OTDOA-Measurement,
    event7c                             UP-GPS-Measurement
}

UP-MeasurementInterval ::=          ENUMERATED {
                                        e5, e15, e60, e300,
                                        e900, e1800, e3600, e7200 }

UP-MethodType ::=                   ENUMERATED {
                                        ue-Assisted,
                                        ue-Based,
                                        ue-BasedPreferred,
                                        ue-AssistedPreferred }

UP-MultipleSets ::=             SEQUENCE {
    numberOfOTDOA-IPDL-GPS-Sets         INTEGER (2..3),
    numberOfReferenceCells              INTEGER (1..3),
    referenceCellRelation               ReferenceCellRelation
}

UP-OTDOA-AssistanceData ::=     SEQUENCE {
    up-OTDOA-ReferenceCell              UP-OTDOA-ReferenceCell              OPTIONAL,
    up-OTDOA-MeasurementAssistDataList UP-OTDOA-MeasurementAssistDataList   OPTIONAL,
    up-IPDL-Parameters                  UP-IPDL-Parameters                  OPTIONAL
}

UP-OTDOA-AssistanceSIB ::=          SEQUENCE {
    up-CipherParameters                 UP-CipherParameters             OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    referenceCellPosition               ReferenceCellPosition,
    up-IPDL-Parameters                  UP-IPDL-Parameters                  OPTIONAL,
    cellToMeasureInfoList               CellToMeasureInfoList
}

UP-OTDOA-Measurement ::=            SEQUENCE {
    sfn                                 INTEGER (0..4095),
    ue-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2,
    qualityChoice                       CHOICE {
        std-10                              ReferenceQuality10,
        std-50                              ReferenceQuality50,
        cpich-EcN0                          CPICH-Ec-N0-OTDOA,
        defaultQuality                      ReferenceQuality
    },
    neighbourList                       NeighbourList                       OPTIONAL
}

UP-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
}

UP-OTDOA-MeasurementAssistDataList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            UP-OTDOA-MeasurementAssistData

UP-OTDOA-ReferenceCell ::=          SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellPosition                        ReferenceCellPosition               OPTIONAL
}
```

```
UP-Position ::=                 SEQUENCE {
    referenceSFN                        ReferenceSFN,
    gps-TOW                             GPS-TOW-1usec,
    positionEstimate                    PositionEstimate
}

UP-ReportCriteria ::=               CHOICE {
    up-ReportingCriteria                UP-EventParamList,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

UP-ReportingQuantity ::=            SEQUENCE {
    methodType                          UP-MethodType,
    positioningMethod                   PositioningMethod,
    responseTime                        UP-ResponseTime,
    accuracy                            UP-Accuracy                     OPTIONAL,
    gps-TimingOfCellWanted              BOOLEAN,
    multipleSets                        BOOLEAN,
    environmentCharacterisation         EnvironmentCharacterisation         OPTIONAL
}

UP-ResponseTime ::=             ENUMERATED {
                                        s1, s2, s4, s8, s16,
                                        s32, s64, s128 }

UTRA-CarrierRSSI ::=                INTEGER (-95..-30)


UTRAN-ReferenceTime ::=             SEQUENCE {
    gps-TOW                             GPS-TOW-1usec,
    sfn                                 INTEGER (0..4095)
}

VarianceOfRLC-BufferPayload ::=     ENUMERATED {
                                        plv0, plv4, plv8, plv16, plv32, plv64,
                                        plv128, plv256, plv512, plv1024,
                                        plv2k, plv4k, plv8k, plv16k }

-- Actual value = IE value * 0.1
W ::=                               INTEGER (0..20)

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

BCC ::=                             INTEGER (0..7)

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

-- Actual value = IE value * 8
BCCH-ModificationTime ::=           INTEGER (0..511)

BSIC ::=                            SEQUENCE {
    ncc                                 NCC,
    bcc                                 BCC
}

CBS-DRX-Level1Information ::=       SEQUENCE {
    ctch-AllocationPeriod               INTEGER (1..256),
    cbs-FrameOffset                     INTEGER (0..255)
}

CDMA2000-Message ::=                SEQUENCE {
    msg-Type                            BIT STRING (SIZE (8)),
    payload                             BIT STRING (SIZE (1..512))
}

CDMA2000-MessageList ::=                SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                            CDMA2000-Message

CDMA2000-UMTS-Frequency-List    ::=     SEQUENCE (SIZE (1..maxNumCDMA2000Freqs)) OF
                                            FrequencyInfoCDMA2000

CellValueTag ::=                        INTEGER (1..4)

--Actual value = 2^(IE value)
ExpirationTimerFactor           ::=     INTEGER (1..8)
```

```
FDD-UMTS-Frequency-List         ::=     SEQUENCE (SIZE (1..maxNumFDDFreqs)) OF
                                            FrequencyInfoFDD

FrequencyInfoCDMA2000           ::=     SEQUENCE {
                                            band-Class      BIT STRING (SIZE (5)),
                                            cdma-Freq       BIT STRING (SIZE(11))
}

GSM-BA-Range                    ::=     SEQUENCE {
                                            gsmLowRangeUARFCN       UARFCN,
                                            gsmUpRangeUARFCN        UARFCN
}

GSM-BA-Range-List               ::=     SEQUENCE (SIZE (1..maxNumGSMFreqRanges)) OF
                                            GSM-BA-Range

GSM-Classmark2::=                   OCTET STRING (SIZE (5))

GSM-Classmark3::=                   OCTET STRING

GSM-MessageList ::=                 SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..512))

IdentificationOfReveivedMessage ::= SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        receivedMessageType             ReceivedMessageType
}

InterRAT-ChangeFailureCause ::=     CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    unspecified                         NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

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

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

InterRAT-HO-Failure ::=         SEQUENCE {
    interRAT-HO-FailureCause            InterRAT-HO-FailureCause            OPTIONAL,
    interRATMessage                 InterRATMessage                 OPTIONAL
}

InterRAT-HO-FailureCause ::=        CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    interRAT-ProtocolError              NULL,
    unspecified                         NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL
}

InterRATMessage ::=             CHOICE {
    gsm                                 SEQUENCE {
        gsm-MessageList                     GSM-MessageList
    },
    cdma2000                            SEQUENCE {
        cdma2000-MessageList                CDMA2000-MessageList
    }
}

InterRATMessageList ::=         SEQUENCE (SIZE (1..maxSystemCapability)) OF
                                            InterRATMessage

MasterInformationBlock ::=          SEQUENCE {
        mib-ValueTag                    MIB-ValueTag,
```

```
        plmn-Type                       PLMN-Type,
        -- TABULAR: The PLMN identity and ANSI-41 core network information
        -- are included in PLMN-Type.
        sibSb-ReferenceList             SIBSb-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

MIB-ValueTag ::=                    INTEGER (1..8)

NCC ::=                             INTEGER (0..7)

PLMN-ValueTag ::=                   INTEGER (1..256)


PredefinedConfigIdentityAndValueTag ::= SEQUENCE {
    predefinedConfigIdentity                PredefinedConfigIdentity,
    predefinedConfigValueTag                PredefinedConfigValueTag    OPTIONAL
}

ProtocolErrorInformation ::=        SEQUENCE {
    diagnosticsType                     CHOICE {
        type1                               SEQUENCE {
            protocolErrorCause                  ProtocolErrorCause
        },
        spare                               NULL
    }
}

ReceivedMessageType ::=             ENUMERATED {
                                        activeSetUpdate,
                                        cellUpdateConfirm,
                                        counterCheck,
                                        downlinkDirectTransfer,
                                        interRATHandoverCommand,
                                        measurementControl,
                                        pagingType2,
                                        physicalChannelReconfiguration,
                                        physicalSharedChannelAllocation,
                                        radioBearerReconfiguration,
                                        radioBearerRelease,
                                        radioBearerSetup,
                                        rrcConnectionRelease,
                                        rrcConnectionReject,
                                        rrcConnectionSetup,
                                        securityModeCommand,
                                        signallingConnectionRelease,
                                        transportChannelReconfiguration,
                                        transportFormatCombinationControl,
                                        ueCapabilityEnquiry,
                                        ueCapabilityInformationConfirm,
                                        uplinkPhysicalChannelControl,
                                        uraUpdateConfirm,
                                        utranMobilityInformation,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7
}

Rplmn-Information               ::=     SEQUENCE {
                                            gsm-BA-Range-List       GSM-BA-Range-List   OPTIONAL,
                                            fdd-UMTS-Frequency-List FDD-UMTS-Frequency-List
    OPTIONAL,
                                            tdd-UMTS-Frequency-List FDD-UMTS-Frequency-List
    OPTIONAL,
                                            cdma2000-UMTS-Frequency-List    CDMA2000-UMTS-Frequency-
List    OPTIONAL
}

SchedulingInformation ::=           SEQUENCE {
    scheduling                          SEQUENCE {
        segCount                            SegCount                        DEFAULT 1,
        sib-Pos                             CHOICE {
            -- The element name indicates the repetition period and the value
            -- (multiplied by two) indicates the position of the first segment.
            rep4                                INTEGER (0..1),
            rep8                                INTEGER (0..3),
            rep16                               INTEGER (0..7),
            rep32                               INTEGER (0..15),
            rep64                               INTEGER (0..31),
            rep128                              INTEGER (0..63),
            rep256                              INTEGER (0..127),
            rep512                              INTEGER (0..255),
            rep1024                             INTEGER (0..511),
```

```
            rep2048                             INTEGER (0..1023),
            rep4096                             INTEGER (0..2047)
        },
        sib-PosOffsetInfo                   SibOFF-List                     OPTIONAL
    }
}

SchedulingInformationSIB ::=            SEQUENCE {
    sib-Type                            SIB-TypeAndTag,
    scheduling                          SchedulingInformation
}

SchedulingInformationSIBSb ::=          SEQUENCE {
    sibSb-Type                          SIBSb-TypeAndTag,
    scheduling                          SchedulingInformation
}

SegCount ::=                        INTEGER (1..16)

SegmentIndex ::=                    INTEGER (1..15)

-- Actual value = 2 * IE value
SFN-Prime ::=                       INTEGER (0..2047)


SIB-Data-fixed ::=                  BIT STRING (SIZE (222))


SIB-Data-variable ::=               BIT STRING (SIZE (1..214))

SIB-ReferenceList ::=               SEQUENCE (SIZE (1..maxSIB)) OF
                                        SchedulingInformationSIB

SIBSb-ReferenceList ::=             SEQUENCE (SIZE (1..maxSIB)) OF
                                        SchedulingInformationSIBSb

SIB-ReferenceListFACH ::=           SEQUENCE (SIZE (1..maxSIB-FACH)) OF
                                        SchedulingInformationSIB

SIB-Type ::=                        ENUMERATED {
                                        masterInformationBlock,
                                        systemInformationBlockType1,
                                        systemInformationBlockType2,
                                        systemInformationBlockType3,
                                        systemInformationBlockType4,
                                        systemInformationBlockType5,
                                        systemInformationBlockType6,
                                        systemInformationBlockType7,
                                        systemInformationBlockType8,
                                        systemInformationBlockType9,
                                        systemInformationBlockType10,
                                        systemInformationBlockType11,
                                        systemInformationBlockType12,
                                        systemInformationBlockType13,
                                        systemInformationBlockType13-1,
                                        systemInformationBlockType13-2,
                                        systemInformationBlockType13-3,
                                        systemInformationBlockType13-4,
                                        systemInformationBlockType14,
                                        systemInformationBlockType15,
                                        systemInformationBlockType15-1,
                                        systemInformationBlockType15-2,
                                        systemInformationBlockType15-3,
                                        systemInformationBlockType16,
                                        systemInformationBlockType17,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7 }

SIB-TypeAndTag ::=                  CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        PLMN-ValueTag,
    sysInfoType3                        CellValueTag,
    sysInfoType4                        CellValueTag,
    sysInfoType5                        CellValueTag,
    sysInfoType6                        CellValueTag,
    sysInfoType7                        NULL,
    sysInfoType8                        CellValueTag,
    sysInfoType9                        NULL,
    sysInfoType10                       NULL,
    sysInfoType11                       CellValueTag,
    sysInfoType12                       CellValueTag,
    sysInfoType13                       CellValueTag,
    sysInfoType13-1                     CellValueTag,
```

```
    sysInfoType13-2                    CellValueTag,
    sysInfoType13-3                    CellValueTag,
    sysInfoType13-4                    CellValueTag,
    sysInfoType14                      NULL,
    sysInfoType15                      CellValueTag,
    sysInfoType16                      PredefinedConfigIdentityAndValueTag,
    sysInfoType17                      NULL
}

SIBSb-TypeAndTag ::=                   CHOICE {
    sysInfoType1                       PLMN-ValueTag,
    sysInfoType2                       PLMN-ValueTag,
    sysInfoType3                       CellValueTag,
    sysInfoType4                       CellValueTag,
    sysInfoType5                       CellValueTag,
    sysInfoType6                       CellValueTag,
    sysInfoType7                       NULL,
    sysInfoType8                       CellValueTag,
    sysInfoType9                       NULL,
    sysInfoType10                      NULL,
    sysInfoType11                      CellValueTag,
    sysInfoType12                      CellValueTag,
    sysInfoType13                      CellValueTag,
    sysInfoType13-1                    CellValueTag,
    sysInfoType13-2                    CellValueTag,
    sysInfoType13-3                    CellValueTag,
    sysInfoType13-4                    CellValueTag,
    sysInfoType14                      NULL,
    sysInfoType15                      CellValueTag,
    sysInfoType16                      PredefinedConfigIdentityAndValueTag,
    sysInfoType17                      NULL,
    sysInfoTypeSB1                     CellValueTag,
    sysInfoTypeSB2                     CellValueTag
}

SibOFF ::=                         ENUMERATED {
                                       so2, so4, so6, so8, so10,
                                       so12, so14, so16, so18,
                                       so20, so22, so24, so26,
                                       so28, so30, so32 }

SibOFF-List ::=                    SEQUENCE (SIZE (1..15)) OF
                                       SibOFF

SysInfoType1 ::=                   SEQUENCE {
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo   NAS-SystemInformationGSM-MAP,
        cn-DomainSysInfoList           CN-DomainSysInfoList,
    -- User equipment IEs
        ue-ConnTimersAndConstants      UE-ConnTimersAndConstants,
        ue-IdleTimersAndConstants      UE-IdleTimersAndConstants,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions          SEQUENCE {}
}

SysInfoType2 ::=                   SEQUENCE {
    -- UTRAN mobility IEs
        ura-IdentityList               URA-IdentityList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions          SEQUENCE {}
}

SysInfoType3 ::=                   SEQUENCE {
        sib4indicator                  BOOLEAN,
    -- UTRAN mobility IEs
        cellIdentity                   CellIdentity,
        cellSelectReselectInfo         CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction          CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions          SEQUENCE {}
}

SysInfoType4 ::=                   SEQUENCE {
    -- UTRAN mobility IEs
        cellIdentity                   CellIdentity,
        cellSelectReselectInfo         CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction          CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions          SEQUENCE {}
}

SysInfoType5 ::=                   SEQUENCE {
        sib6indicator                  BOOLEAN,
```

```
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset
            },
            tdd                             SEQUENCE {
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                midambleConfiguration           MidambleConfiguration       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
    }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType6 ::=                    SEQUENCE {
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset,
                csich-PowerOffset               CSICH-PowerOffset           OPTIONAL
            },
            tdd                             SEQUENCE {
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                midambleConfiguration           MidambleConfiguration       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList         OPTIONAL,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList        OPTIONAL,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType7 ::=                    SEQUENCE {
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                ul-Interference                 UL-Interference
            },
            tdd                             NULL
        },
        prach-Information-SIB5-List     DynamicPersistenceLevelList,
        prach-Information-SIB6-List     DynamicPersistenceLevelList         OPTIONAL,
        expirationTimeFactor            ExpirationTimerFactor               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType8 ::=                    SEQUENCE {
    -- User equipment IEs
        cpch-Parameters                 CPCH-Parameters,
    -- Physical channel IEs
        cpch-SetInfoList                CPCH-SetInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType9 ::=                    SEQUENCE {
    -- Physical channel IEs
        cpch-PersistenceLevelsList      CPCH-PersistenceLevelsList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType10 ::=                   SEQUENCE {
    -- User equipment IEs
        drac-SysInfoList                DRAC-SysInfoList,
    -- Extension mechanism for non- release99 information
```

```
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType11 ::=                   SEQUENCE {
        sib12indicator                  BOOLEAN,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType12 ::=                   SEQUENCE {
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13 ::=                   SEQUENCE {
    -- Core network IEs
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants           OPTIONAL,
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-1 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-RAND-Information        ANSI-41-RAND-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-2 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-UserZoneID-Information  ANSI-41-UserZoneID-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-3 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-PrivateNeighbourListInfo ANSI-41-PrivateNeighbourListInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-4 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-GlobalServiceRedirectInfo
                                        ANSI-41-GlobalServiceRedirectInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType14 ::=                   SEQUENCE {
    -- Physical channel IEs
        individualTS-InterferenceList   IndividualTS-InterferenceList,
        expirationTimeFactor            ExpirationTimerFactor               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15 ::=                   SEQUENCE {
    -- Measurement IEs
        up-GPS-Assistance               UP-Cipher-GPS-Data-Indicator        OPTIONAL,
        up-OTDOA-Assistance         UP-OTDOA-AssistanceSIB              OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15-1 ::=                 SEQUENCE {
    -- DGPS corrections
        up-DGPS-SIB-Data                UP-DGPS-SIB-Data
}

SysInfoType15-2 ::=                 SEQUENCE {
-- Ephemeris and clock corrections
    up-Ephe-SIB-Data                UP-Ephe-SIB-Data
```

```
}

SysInfoType15-3 ::=                 SEQUENCE {
    -- Almanac and other data
        transmissionTOW                 INTEGER (0..1048575),
        satMask                         BIT STRING (SIZE (1..32)),
        lsbTOW                          BIT STRING (SIZE (8)),
        up-Alma-SIB-DataList            UP-Alma-SIB-DataList
}

SysInfoType16 ::=                   SEQUENCE {
    -- Radio bearer IEs
        preDefinedRadioConfiguration    PreDefRadioConfiguration,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType17 ::=                   SEQUENCE {
    -- Physical channel IEs
        pusch-SysInfoList               PUSCH-SysInfoList               OPTIONAL,
        pdsch-SysInfoList               PDSCH-SysInfoList               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoTypeSB1 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoTypeSB2 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}
TDD-UMTS-Frequency-List ::=             SEQUENCE (SIZE (1..maxNumTDDFreqs)) OF
                                            FrequencyInfoTDD

-- ***************************************************
--
--      ANSI-41 INFORMATION ELEMENTS (10.3.9)
--
-- ***************************************************

ANSI-41-GlobalServiceRedirectInfo ::=   ANSI-41-NAS-Parameter
ANSI-41-PrivateNeighbourListInfo ::=    ANSI-41-NAS-Parameter
ANSI-41-RAND-Information ::=            ANSI-41-NAS-Parameter
ANSI-41-UserZoneID-Information ::=      ANSI-41-NAS-Parameter
ANSI-41-NAS-Parameter ::=               BIT STRING (SIZE (1..2048))

Min-P-REV ::=                           BIT STRING (SIZE (8))

NAS-SystemInformationANSI-41 ::=        ANSI-41-NAS-Parameter
NID ::=                                 BIT STRING (SIZE (16))

P-REV ::=                               BIT STRING (SIZE (8))

SID ::=                                 BIT STRING (SIZE (15))

END
```

3GPP TSG-RAN WG2 Meeting #19 *Tdoc R2-010380*
Sophia Antipolis, France, February 19th-23rd 2001

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**659**	⌘	rev	**-**	⌘	Current version:	**3.5.0**	⌘

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

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

Title: ⌘	New paging and establishment cause "Unknown"		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘		***Date:*** ⌘	2001-02-09
Category: ⌘	**F**	***Release:*** ⌘	R99
	Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	1. In some cases, the cause for paging is unknown by the CN. In the current version of the RRC specification there is no paging and establishment cause to be used in that case. 2. The establishment cause does not distinguish between originating and terminating in the case of signalling (e.g. SMS). For prioritization, UTRAN needs to know whether it is terminating or originating signalling.
Summary of change: ⌘	A new cause value "Terminating – cause unknown" has been added which can be used for CN originated paging when the CN does not know the cause and therefore does not provide UTRAN with the cause for paging (in RANAP the paging cause is optional). Since the paging cause is used by the UE-NAS when setting the establishment cause, a corresponding establishment cause is added as well, to be used when the RRC connection is established because of a terminating call with cause unknown. Also, the two existing establishment causes for signalling have been divided into four, to be able to distinguish between originating and terminating signalling.
Consequences if not approved: ⌘	Paging when the paging cause is unknown over RANAP would need to be mapped by UTRAN to some other establishment cause in RRC. This other establishment cause in RRC could then not be used to its full extent. In case of establishment cause for signalling, UTRAN would not know whether the RRC connection is established due to originating or terminating signalling, which may need to be prioritized differently.

Clauses affected: ⌘	8.1.2.2, 8.1.11.2, 10.3.3.11, 10.3.3.22, 11.3		
Other specs affected: ⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘	

Other comments: ⌘	

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

8.1.2.2 Initiation

UTRAN initiates the paging procedure by transmitting a PAGING TYPE 1 message on an appropriate paging occasion on the PCCH.

UTRAN may repeat transmission of a PAGING TYPE 1 message to a UE in several paging occasions to increase the probability of proper reception of a page.

UTRAN may page several UEs in the same paging occasion by including one IE "Paging record" for each UE in the PAGING TYPE 1 message.

For CN originated paging, UTRAN should set the IE “Paging cause” to the cause for paging received from upper layers. If no cause for paging is available, UTRAN should set the value “Terminating – cause unknown”.

UTRAN may also indicate that system information has been updated, by including the value tag of the master information block in the IE "BCCH modification information" in the PAGING TYPE 1 message. In this case, UTRAN may omit the IEs "Paging record".

8.1.11.2 Initiation

For a UE in CELL_DCH or CELL_FACH state, UTRAN initiates the procedure by transmitting a PAGING TYPE 2 message on the DCCH using AM RLC. When not stated otherwise elsewhere, the UTRAN may initiate the UE dedicated paging procedure also when another RRC procedure is ongoing, and in that case the state of the latter procedure shall not be affected.

UTRAN should set the IE “Paging cause” to the cause for paging received from upper layers. If no cause for paging is available, UTRAN should set the value “Terminating – cause unknown”.

10.3.3.11 Establishment cause

Cause for an RRC connection establishment request.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Establishment cause	MP		Enumerated(Originating Conversational Call, Originating Streaming Call, Originating Interactive Call, Originating Background Call, Originating Subscribed traffic Call, Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Emergency Call, Inter-RAT cell re-selection, Inter-RAT cell change order, Registration,Detach, Originating High Priority Signalling, Originating Low Priority Signalling, Call re-establishment, Terminating High Priority Signalling, Terminating Low Priority Signalling, Terminating – cause unknown)	At least one spare value needed.

10.3.3.22 Paging cause

Cause for a CN originated page.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Paging cause	MP		Enumerated(Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Terminating High Priority Signalling, Terminating Low Priority Signalling, Terminating – cause unknown)	

11.3 Information element definitions

```
-- ***************************************************
--
--     USER EQUIPMENT INFORMATION ELEMENTS (10.3.3)
--
-- ***************************************************


EstablishmentCause ::=              ENUMERATED {
                                        originatingConversationalCall,
                                        originatingStreamingCall,
                                        originatingInteractiveCall,
                                        originatingBackgroundCall,
                                        originatingSubscribedTrafficCall,
                                        terminatingConversationalCall,
                                        terminatingStreamingCall,
                                        terminatingInteractiveCall,
                                        terminatingBackgroundCall,
                                        emergencyCall,
                                        interRAT-CellReselection,
                                        interRAT-CellChangeOrder,
                                        registration,
                                        detach,
                                        originatingHhighPrioritySignalling,
                                        originatingLlowPrioritySignalling,
                                        callRe-establishment,
                                        terminatingHighPrioritySignalling,
                                        terminatingLowPrioritySignalling,
                                        terminatingCauseUnknown,
                                        spare1 }


PagingCause ::=                     ENUMERATED {
                                        terminatingConversationalCall,
                                        terminatingStreamingCall,
                                        terminatingInteractiveCall,
                                        terminatingBackgroundCall,
                                        terminatingHhighPrioritySignalling,
                                        terminatingLlowPrioritySignalling,
                                        terminatingCauseUnknown
 }
```

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**660**	⌘ rev	**r1**	⌘ Current version:	**3.5.0**	⌘

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

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

Title:	⌘	Miscellaneous procedure corrections		
Source:	⌘	TSG-RAN WG2		
Work item code:	⌘		***Date:*** ⌘	2001-02-21
Category:	⌘	**F**	***Release:*** ⌘	R99

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

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

Reason for change: ⌘ The procedure text contains minor errors, unclear statements and missing error cases.

Summary of change: ⌘

- The interaction with upper layers has been clarified and is now more accurate and complete.
  1. The term "upper layers" is used everywhere.
  2. The term "signalling connection" is used when appropriate. An explanation of the term "signalling connection" has been added (based on the current definition) in 5.2.
  3. Information about which signalling connections that are established is stored in a new variable.
  4. Initialisation of established signalling connections at inter-RAT handover to UTRAN added.
  5. Reception of DOWNLINK DIRECT TRANSFER when no signalling connection is established for the CN domain added as an error case causing the UE respond with RRC STATUS.
  6. Indication of release of RABs added (besides indicating release of the established signalling connections) in those places where the UE enters idle mode.
- 7. To align with upper layer specifications, the term "abort" is added to identify cases when upper layers in the UE request a release of a signalling connection and when the UE enters idle mode due to a failure situation..
- Indentation error in the Paging procedure corrected.
- The term "signalling link" is removed and replaced with "signalling radio bearers" or "radio bearers" where applicable.
- The phrase "resume normal operation" is replaced with "continue any ongoing processes and procedures" .

- References to Release 99 are replaced with "in this version".

- Corrections of some error cases in the RRC connection establishment procedure.
  1. In case of a received configuration in RRC CONNECTION SETUP, which is invalid or unsupported the UE will transmit a new RRC CONNECTION REQUEST message, setting the “Protocol error indicator” flag.
  2. The case when no C-RNTI is included in RRC CONNECTION SETUP and the UE would transit to CELL_FACH state now results in a retransmission of RRC CONNECTION REQUEST instead of cell update to align with other error cases in the same procedure state.

- Editorial corrections in the RRC Connection Release procedure.

- References to the non-existing RRC Connection Re-establishment procedure corrected (removed or replaced by reference to the cell update procedure).

- Handling of simultaneous reconfiguration procedures corrected.
  1. Only one reconfiguration procedure is allowed at the time. The UE will reject a subsequent reconfiguration procedure if another one is ongoing.
  2. The variables ORDERED_CONFIG and ORDERED_ASU are removed since the transaction id handling now covers the incompatible simultaneous reconfiguration cases. However a new variable ORDERED_RECONFIGURATION has been added which is set to TRUE during an ongoing Reconfiguration procedure, and used in the transaction id handling in order to reduce the amount of text.

- The interaction has been further clarified between the reconfiguration procedures and the cell update procedure.
  1. In case the CELL UPDATE CONFIRM contains a reconfiguration (physical channel, transport channel and/or radio bearer reconfiguration), the CELL UPDATE CONFIRM message will the rejected (by transmission of a new CELL UPDATE containing a failure cause) if a reconfiguration procedure is ongoing.
  2. In the same way the Reconfiguration procedure is rejected if the CELL UPDATE CONFIRM message contained a reconfiguration and the UE receives a reconfiguration message before completing the cell update procedure.
  3. The case when receiving a reconfiguration message while waiting for CELL UPDATE CONFIRM has been clarified. This may happen at least during periodic cell update in CELL_FACH state and the UE will in that case reject the reconfiguration procedure.
  4. The variables ORDERED_RECONFIGURATION and CELL_UPDATE_STARTED are used for the specification of these interaction checks.

- The approach when a cell reselection occurs during a reconfiguration procedure has been changed slightly to be more natural. If the target state is CELL_FACH, CELL_PCH or URA_PCH, the reconfiguration procedure will succeed even if a cell was assigned in the reconfiguration message.

- The “physical channel failure” case for the reconfiguration procedures has been clarified.
  1. When the UE fails to revert to the old configuration a cell update procedure is performed, using different cell update causes depending on source state, because “old configuration” means different things.
  2. If the source state is CELL_DCH, the cause “radio link failure” is used.
  3. If the source state is CELL_FACH, the cause “cell reselection” is used.

- The error case when the received message includes the RRC state indicator set to a value not consistent with the contents of the message is now covered in all procedures, including cell/URA update.

- The different cases during transition to CELL_FACH, CELL_PCH or URA_PCH state has been clarified for the reconfiguration procedures.
  1. If the UE is assigned a frequency, the UE shall select a suitable UTRA cell on that frequency, and perform a cell update with cause “cell reselection”.
  2. If the UE transits to CELL_FACH or CELL_PCH state and is assigned a cell, but selects another cell, the UE will perform a cell update with cause “cell reselection”.
  3. If the UE transits to CELL_FACH and is not assigned a C-RNTI it will perform a cell update with cause “cell reselection”.
  4. If the UE transits to URA_PCH state and has no assigned URA that is valid in the selected cell, the UE will perform a URA update with cause “URA reselection”.
  5. In case of transition to CELL_PCH or URA_PCH, the cell or URA update would be performed after sending the response message and after the state transition.
  6. In case that the reconfiguration procedure would transit the UE to CELL_FACH state and if the cell update procedure performed in the middle did assign the UE an another state than CELL_FACH, the UE will perform a new cell update procedure using the cause “uplink data transmission”, since the UE has a response message for the reconfiguration procedure to transmit.

- The error handling for the TRANSPORT FORMAT COMBINATION CONTROL message using RLC-TM has been clarified. The UE shall ignore an erroneous message.

- Minor corrections in the cell and URA update procedures to remove errors and make the text more precise:
  1. One reference to “useT314” corrected to “useT315”.
  2. The case when an UE in URA_PCH state enters a cell in which no URA identities are broadcast is clarified. The result should be that the UE will perform URA update until the network makes the UE leave URA_PCH state or it gives up.
  3. If a C-RNTI is not assigned in URA UPDATE CONFIRM and the target state is CELL_FACH, this will now cause a CELL UPDATE with cause “cell reselection” to be transmitted.
  4. Some cases for which response message from the UE to transmit have been clarified.

- Note on parallel CELL UPDATE and URA UPDATE procedures is clarified in 8.3.1.3.

- Interaction cases and error cases concerning the active set update procedure clarified and corrected:
  1. Removal of all radio links is not accepted by the UE and causes the active set update procedure to fail.
  2. When an ACTIVE SET UPDATE message is received, a check is made (at the reception of the message) whether the message is consistent with the active set that will be established at the activation time. This means that ACTIVE SET UPDATE can be handled during an ongoing reconfiguration procedures or an ongoing active set update procedure.
  3. A received reconfiguration message during an ongoing active set update procedure is rejected, since there is no motivation for allowing it and the behaviour if allowing it would be complicated.

- The handling of the IE “Signalling connection release indication” corrected.
  1. Only the signalling connection is released, not the radio bearers, since the

latter are released using an explicit mandatory IE in the RADIO BEARER RELEASE message.
2. An error handling for the case there would remain radio bearers for the release CN domain is added (the UE would reject the procedure in that case).

- Subsequent received messages of the same type, but with different transaction identities as an already accepted message, was before rejected. For many messages, such as MEASUREMENT CONTROL this is not desired. The UE shall reject a subsequent message only if there is a potential interaction. The principle will be as follows:
  1. A message that would interact with any accepted transaction or contain a protocol error will be put in "Rejected transactions", causing a FAILURE message to be sent.
  2. A message with an identical transaction id as any accepted transaction for the same message type will be ignored.
  3. A syntactical correct message that would not interact with any accepted transaction (based on message type) will be put into "Accepted transactions", even if there already exists an accepted transaction for the same message type. This is a slight change compared to before. Note however, that the message may be rejected in the procedure if the contained IEs causes interaction with an ongoing procedure (variables are used for this).
  Moreover, the text on handling of the received transaction identifier has been partly restructured in order to make the different cases easier to follow

- The reception of a subsequent response message from UTRAN with a different transaction id than a previous response message for an ongoing UE originated procedure is now covered. For instance, if the UE receives a second CELL UPDATE CONFIRM message, with a different transaction id than a previous, still during processing, CELL UPDATE CONFIRM message, the UE will take the second message and ignore the previous message. By looking at the transaction id in the response message from the UE UTRAN will know which CELL UPDATE CONFIRM message the UE handled. The same goes for RRC CONNECTION SETUP and URA UPDATE CONFIRM.

- The general error handling is enhanced to covered "unsolicited" received messages, such as a CELL UPDATE CONFIRM message when no cell update procedure is ongoing.
  1. If the UE receives an unsolicited message it ignores the message (the reason is that the network may repeat messages which may be received after a procedure has been completed in the UE – crossing signalling) .
  2. Also the error handling if the UE receives a message with a message type not defined for the logical channel type is clarified (which is e.g. transmission of RRC STATUS in case of DCCH). *NOTE: This would imply the UE shall accept DOWNLINK DIRECT TRANSFER on RB2 and a PHYSICAL CHANNEL RECONFIGURATION on RB3 (both are mapped on a DCCH). It is up to UTRAN to use the signalling radio bearers in the intended way (i.e. as specified in 6.3) for downlink.* Clarifications on handling of individual IEs which does not result in any valid abstract syntax value (same as when using spare values). ASN.1 violation or encoding error clarified.

- The error handling of "critical" and "non-critical" extensions clarified and aligned with how "critical" extensions are signalled. A check is made in the beginning if a critical extension is present in the message. This has lead to a slight restructuring of clause 9.

- Only one reconfiguration of security (ciphering/integrity protection) is allowed at the time. A message trying to reconfigure security while a security reconfiguration is ongoing is rejected. This affects the Security Mode Control, Reconfiguration, Cell Update, URA Update, UTRAN Mobility Information and Active Set Update procedures. New variables are added for this.

- The interaction between a procedure making a security reconfiguration and the cell update procedure has been specified. If a security reconfiguration is ongoing, the triggering of a cell update makes the procedure that initiated the security reconfiguration to fail (and an appropriate FAILURE message will be returned after the cell update procedure). In this way, UTRAN can always use the old security configuration for the CELL UPDATE CONFIRM message. The cell update may be triggered by cell re-selection, but also because of other reasons. Therefore the failure cause "Cell re-selection" is renamed into "cell update occurred".

- Indentation error in the UTRAN Mobility Information procedure corrected.

- A clarification has been made that the UE clears the dedicated physical channel configuration at radio link failure.
- Incorrect reference to subclause in TS 25.304 removed.

- Units for Timer_MRW is specified in 10.3.4.25.

- 10.3.6.49 - missing comma.

- The IE "Transaction identifier" has been added in the ASSISTANCE DATA DELIVERY message, be used for error reporting with RRC STATUS. The IE "Integrity check info" has been added in tabular in the ASSISTANCE DATA DELIVERY message (in ASN.1 it was already present).

- An error has been corrected at reception of the IE "Downlink information for each radio link" which would prevent the network to assign the UE a cell upon transition to CELL_FACH, CELL_PCH or URA_PCH state. This should of course be allowed and is assumed in other places in the specification. If the UE selects another cell than the assigned cell, the procedure will succeed but the UE will first perform a cell update procedure.

- The "Need" column for some RRC variables have been corrected from "MP" to "OP" where storage of information is not mandatory. Initialisation of variables added at establishment of the RRC connection and at Inter-RAT handover to UTRAN. Clearance of some variables have been corrected.

- References to the non-existing procedure Downlink Outer Loop Power Control have been removed.

- The concept of "expired" activation time is removed from the Reconfiguration Procedures since the UE can not identify when the activation time has expired. The same has been done for the Security mode control procedure.

- Handling of conflict in activation time added in the active setup update procedure. The UE is now allowed (but not required) to reject the active set update in case it is too close in time to another reconfiguration procedure. The time window to detect conflict in activation time has been set to 5 frames, and it corresponds to the lowest N1value of the reconfiguration procedure.

- Handling of the following errors in the IEs "Ciphering mode info" and "integrity protection mode info" added, that will cause the procedure to be rejected:
  1. Stop of ciphering when not started.
  2. Start of integrity protection when already started.
  3. Modification of integrity protection when not started.

- Correction in the procedure for how to use the IE "RB mapping info". It was an error in the rule to derive the downlink channel type from the uplink channel type when CPCH is used in the uplink.

- Clarification made that the value to be used as BEARER in the ciphering algorithm shall be the value of the IE "RB identity" minus one, for each radio

		bearer, respectively. This is because radio bearer identity has the range 1-32 while BEARER is defined as a string of 5 bits. The clarifications are made at reception of the IE "ciphering mode info" (for start/restart of ciphering), at reception of the IE "RB information for setup" (for establishment of a radio bearer), and in the semantics description of the IE "RB identity". • Correction of incorrectly implemented agreed CR 606 (R2-002271), concerning the possibility to avoid repeating the RLC info parameters for a RB for which these parameters are the same as for another RB. • Correcting the references regarding BCCH ARFCN to be GSM TS 05.05. • Corrections regarding the IE "UE timers and constants in connected mode": 1. When used in the UTRAN MOBILITY INFORMATION message, the need was specified as "MD". This would mean that even if no change of timer values were needed at the point when sending the UTRAN MOBILITY INFORMATION message, the IE would be always needed to prevent assignment of default values for all timers. The need is changed to "OP" for that message (but kept as "MD" in SIB1). If the IE is not included in the message, no change of timer values are made in the UE (both for default and non-default). 2. It is clarified that when receiving timer and constants in the UTRAN MOBILITY INFORMATION message, the values replace any previously used values included those obtained in idle mode in system information block type 1. 3. For some of the default values, references were made to the non-existing IE "UE timers and constants in CELL_DCH". This has been corrected and as default values the values from TS 25.331 v3.4.1 have been re-introduced. 4. For the timers T316 and T317 no default values were specified. The proposed default values are 30 seconds for T316 and 180 seconds for T317. • Clarification that the FACH measurement occasion calculation and measurements are only made when the UE is in CELL_FACH state and has a C-RNTI • Specification of the handling of the IE "RB with PDCP information list" in the Active set update procedure added. • In case of non-reception of CN system information for a particular CN domain, it is now clarified that RRC indicates to upper layers that CN system information for that CN domain is not present. This is needed to trigger appropriate upper layer procedures. • A indication of the release of the RAB subflow to upper layers has been added in case of release of a radio bearer. • Handling of the cases when a RAB and/or RB already exists at radio bearer establishment has been added: 1. If the RAB already exists, but not the radio bearer, the radio bearer is added to the RAB. 2. If the radio bearer already exists for the particular RAB, the new radio bearer information is taken as a reconfiguration of the existing radio bearer. 3. If the radio bearer already exists. but for another RAB, this is regarded as an invalid configuration attempt. • Clarification added that the UE shall select and start to receive a Secondary CCPCH at initiation of the RRC connection establishment procedure according to TS 25.304.
Consequences if not approved:	⌘	• Misalignment between RAN2 and N1 specifications • Many error cases unspecified leading to unknown UE behaviour in those cases • Unnecessary permissive simultaneous reconfiguration procedures, leading to increased UE complexity and unspecified error cases • Unnecessary permissive simultaneous security reconfiguration procedures,

	leading to increased UE complexity and unspecified error cases • An attempt to assign the UE a cell in a reconfiguration procedure would not succeed or at least some UEs will report a failure • A risk that the wrong input is used as BEARER in the ciphering algorithm leading to that ciphering may not work • Unnecessary failure of a reconfiguration procedure at cell re-selection in some cases, leading to repetition of the procedure from UTRAN resulting to longer delays and increased usage of radio resources • A too strong requirement on the handling of several active set update procedures with activation times close to each other • Unspecified default values for timers leading to increased signalling and usage of the BCCH • Misalignment between the way to specify critical extensions and the general error handling procedures that are supposed to handle them • Several size critical messages e.g. handover to UTRAN command, RRC connection establishment and the downloadable pre- defined RB configuration IE will be longer which will result in performance loss. • Unintended implication in certain cases that the UE is to suspend operation; no definition of "normal" or "operation".

Clauses affected:	⌘	5.2, 8.1.1.6.1, 8.1.2.3, 8.1.3.2, 8.1.3.5, 8.1.3.6, 8.1.3.7, 8.1.3.8, 8.1.3.9, 8.1.3.10, 8.1.4.1, 8.1.4.2, 8.1.4.3, 8.1.4.6, 8.1.4.7, 8.1.4.9, 8.1.6.5, 8.1.6.6, 8.1.7.4, 8.1.8.1, 8.1.8.2, 8.1.9.1, 8.1.9.2, 8.1.9.3, 8.1.9.3a (new), 8.1.9.4, 8.1.10.1, 8.1.10.2, 8.1.11.3, 8.1.11.4, 8.1.12.1, 8.1.12.2.1, 8.1.12.3, 8.1.12.4a (new), 8.1.12.4b (new), 8.1.12.6, 8.1.13.3, 8.1.13.4, 8.1.14.2, 8.1.14.3, 8.1.15.1, 8.1.15.6, 8.2.2.3, 8.2.2.4, 8.2.2.6, 8.2.2.7, 8.2.2.8, 8.2.2.9, 8.2.2.11, 8.2.2.12, 8.2.2.12a (new), 8.2.2.12b (new), 8.2.2.13, 8.2.5.4, 8.2.5.5, 8.2.7.1, 8.2.8.2, 8.2.10.4, 8.3.1, 8.3.1.1, 8.3.1.2, 8.3.1.3, 8.3.1.4.1, 8.3.1.4.2, 8.3.1.6, 8.3.1.7, 8.3.1.7a (new), 8.3.1.8, 8.3.1.9, 8.3.1.9a (new), 8.3.1.10, 8.3.1.11, 8.3.1.12, 8.3.1.13, 8.3.1.14, 8.3.3.3, 8.3.3.5, 8.3.3.5a, 8.3.3.6, 8.3.4.2, 8.3.4.3, 8.3.4.4, 8.3.4.5, 8.3.4.5a (new), 8.3.4.8, 8.3.4.9 (new), 8.3.6.3, 8.3.6.4, 8.3.7.3, 8.3.7.6, 8.3.11.4, 8.4.1.4, 8.4.1.5, 8.4.3.4, 8.5.2, 8.5.5, 8.5.5.1, 8.5.5.4, 8.5.6, 8.5.11, 8.6.1.2, 8.6.1.3, 8.6.2.1, 8.6.3, 8.6.3.3, 8.6.3.4, 8.6.3.5, 8.6.3.11, 8.6.4.2, 8.6.4.3, 8.6.4.6, 8.6.4.8, 8.6.4.12, 8.6.6.4, 9.2, 9.3, 9.3a (new), 9.3b (new), 9.4, 9.6, 9.7, 9.8, 10.1.1.2, 10.2.4, 10.2.5, 10.2.62, 10.3.3.13, 10.3.3.43, 10.3.4.16, 10.3.4.24, 10.3.4.25, 10.3.6.29, 10.3.6.49, 10.3.7.23, 10.3.7.26, 10.3.7.28, 11.2, 11.3, 13.1, 13.4a (new), 13.4.1, 13.4.5, 13.4.5a (new), 13.4.7, 13.4.8a (new), 13.4.10, 13.4.12, 13.4.13, 13.4.14, 13.4.17, 13.4.19, 13.4.20, 13.4.22, 13.4.24, 13.4.25, 13.4.27
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	Changes relative to R2-010120 are highlighted with yellow. Changes relative to R2-010381, CR 660, highlighted with light blue. This CR refers to a variable INTEGRITY_PROTECTION_ACTIVATION_INFO, which is added in the CR 669.

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

5.2 RRC Services provided to upper layers

The RRC offers the following services to upper layers, a description and primitives of these services are provided in [2], [17].

- General Control;
- Notification;
- Dedicated control.

The RRC layer provides signalling connections to the upper layers to support the exchange of upper layer's information flow. The signalling connection is an acknowledged-mode link between the user equipment and the core network to transfer upper layer information. For each core network domain, at most one signalling connection may exist at the same time. The RRC layer maps the signalling connections for one UE on a single RRC connection.

5.3 Primitives between RRC and upper layers

The primitives between RRC and the upper layers are described in 3GPP TS 24.007.

8.1.1.6.1 System Information Block type 1

If in idle mode, the UE should store all relevant IEs included in this system information block if the "PLMN Type" in the variable SELECTED_PLMN has the value "GSM-MAP" and the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41". The UE shall also:

- forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers;
- for the IE “CN domain system information list”:
  - for each IE “CN domain system information” that is present:
    - forward the content of the IE "CN domain specific NAS system information" ~~to the non-access stratum entity indicated by~~and the IE "CN domain identity" to upper layers; [Note to Hans: Paragraph type changed to B3]
    - use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions and Page indicator as specified in 3GPP TS 25.304; [Note to Hans: Paragraph type changed to B3]
  - if an IE “CN domain system information” is not present for a particular CN domain:
    - indicate to upper layers that no CN system information is available for that CN domain;
- use the values in the IE "UE Timers and constants in idle mode" for the relevant timers and counters.

If in connected mode the UE shall not use the values of the IEs in this system information block except for the timers and constant values given by the IE "UE timers and constants in connected mode".

If in idle mode and system information block type 1 is not scheduled on BCH, and system information block type 13 is not scheduled on BCH the UE shall:

- consider the cell to be barred according to [4]. The UE shall consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE "T_{barred}".

If in idle mode and if

- system information block type 1 is not scheduled on BCH, and
- the "PLMN Type" in the variable SELECTED_PLMN has the value "GSM-MAP", and
- the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41";

the UE shall

- indicate to upper layers that no CN system information is available.

8.1.2 Paging

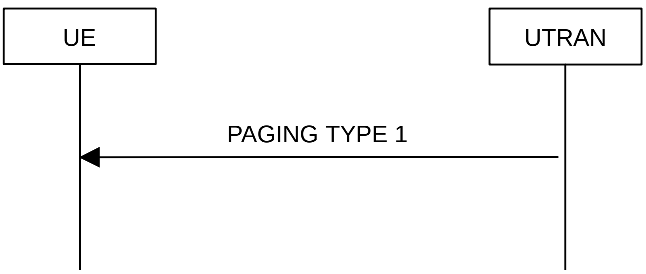


Figure 7: Paging

8.1.2.1 General

This procedure is used to transmit paging information to selected UEs in idle mode, CELL_PCH or URA_PCH state using the paging control channel (PCCH). Upper layers in the network may request paging, to e.g. establish a signalling connection. UTRAN may initiate paging for UEs in CELL_PCH or URA_PCH state to trigger a cell update procedure. In addition, UTRAN may initiate paging for UEs in idle mode, CELL_PCH and URA_PCH state to trigger reading of updated system information.

8.1.2.2 Initiation

UTRAN initiates the paging procedure by transmitting a PAGING TYPE 1 message on an appropriate paging occasion on the PCCH.

UTRAN may repeat transmission of a PAGING TYPE 1 message to a UE in several paging occasions to increase the probability of proper reception of a page.

UTRAN may page several UEs in the same paging occasion by including one IE "Paging record" for each UE in the PAGING TYPE 1 message.

UTRAN may also indicate that system information has been updated, by including the value tag of the master information block in the IE "BCCH modification information" in the PAGING TYPE 1 message. In this case, UTRAN may omit the IEs "Paging record".

8.1.2.3 Reception of a PAGING TYPE 1 message by the UE

A UE in idle mode, CELL_PCH state or URA_PCH state shall receive the paging information for all its monitored paging occasions. For an UE in idle mode, the paging occasions are specified in 3GPP TS 25.304 and depend on the IE "CN domain specific DRX cycle length coefficient", as specified in subclause 8.6.1.1. For a UE in CELL_PCH state or URA_PCH state, the paging occasions depend also on the IE "UTRAN DRX cycle length coefficient" and the IE "RRC State Indicator", as specified in subclauses 8.6.3.2 and 8.6.3.3 respectively.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

If the UE is in idle mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- if the IE "Used paging identity" is a CN identity:
  - compare the ~~included~~ IE “UE identity” with all of its allocated CN UE identities:
  - if one match is found:
    - ~~indicate reception of paging to upper layers;~~
    - indicate reception of paging and forward the IE "CN domain identity", ~~received~~ the IE “UE identity” and the IE “~~p~~Paging cause” to the upper layers ~~entity indicated by the IE "CN domain identity"~~;
- otherwise:
  - ignore that paging record.

If the UE is in connected mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- if the IE "Used paging identity" is a UTRAN identity and if this U-RNTI is the same as the U-RNTI allocated to the UE:
  - if the optional IE "CN originated page to connected mode UE" is included:
    - ~~indicate reception of paging to upper layers;~~
    - indicate reception of paging and forward the IE “CN domain identity”, ~~corresponding~~ the IE “~~p~~Paging cause” and the IE “~~p~~Paging record type identifier” to the upper layers~~ entity indicated by the IE "CN domain identity"~~;
  - perform a cell update procedure with cause "paging response" as specified in subclause 8.3.1.2; [Note to Hans: Paragraph type changed to B2]

  - ignore any other remaining IE "Paging record" that may be present in the message;[Note to Hans: Paragraph type changed to B2]
- otherwise:
  - ignore that paging record.

If the IE "BCCH modification info" is included, any UE in idle mode, CELL_PCH or URA_PCH state shall perform the actions as specified in subclause 8.1.1 irrespective of IE "Paging record" occurrences in the message.

8.1.3 RRC connection establishment

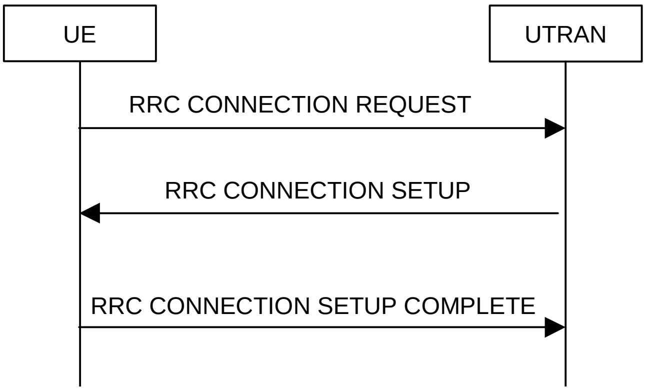


Figure 8: RRC Connection Establishment, network accepts RRC connection

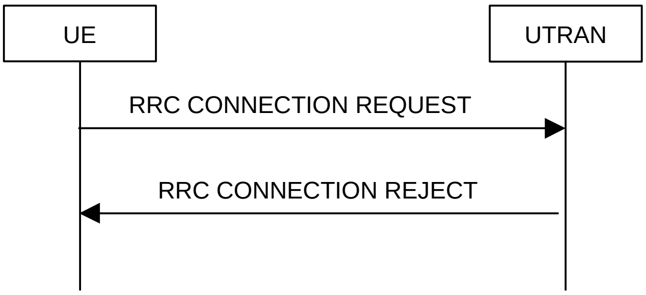


Figure 9: RRC Connection Establishment, network rejects RRC connection

8.1.3.1 General

The purpose of this procedure is to establish an RRC connection.

8.1.3.2 Initiation

The UE shall initiate the procedure when ~~the non-access stratum~~upper layers in the UE requests the establishment of a signalling connection and the UE is in idle mode (no RRC connection exists), as specified in subclause 8.1.8.

Upon initiation of the procedure, the UE shall:

- set the variable PROTOCOL_ERROR_INDICATOR to FALSE;
- set the IE "Initial UE identity" in the variable INITIAL_UE_IDENTITY according to subclause 8.5.1;
- set the contents of the RRC CONNECTION REQUEST message according to subclause 8.1.3.3;
- set CFN in relation to SFN of current cell according to subclause 8.5.15;
- delete the ciphering and integrity protection key in the USIM if the START for any CN domain is greater than the value "THRESHOLD" of the variable START_THRESHOLD. The deletion of the keys shall be informed to upper layers.

- perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
- submit the RRC CONNECTION REQUEST message for transmission on the uplink CCCH;
- reset counter V300; and
- start timer T300 when the MAC layer indicates success or failure to transmit the message;
- select a Secondary CCPCH according to [4];
- start receiving all FACH transport channels mapped on the selected Secondary CCPCH;

8.1.3.3 RRC CONNECTION REQUEST message contents to set

The UE shall, in the transmitted RRC CONNECTION REQUEST message:

- set the IE "Establishment cause" to the value of the variable ESTABLISHMENT_CAUSE;
- set the IE "Initial UE identity" to the value of the variable INITIAL_UE_IDENTITY;
- set the IE "Protocol error indicator" to the value of the variable PROTOCOL_ERROR_INDICATOR;
- include a measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in System Information Block type 11.

8.1.3.4 Reception of an RRC CONNECTION REQUEST message by the UTRAN

Upon receiving an RRC CONNECTION REQUEST message, UTRAN should either:

- submit an RRC CONNECTION SETUP message to the lower layers for transmission on the downlink CCCH; or
- submit an RRC CONNECTION REJECT message on the downlink CCCH. In the RRC CONNECTION REJECT message, the UTRAN may direct the UE to another UTRA carrier or to another system. After the RRC CONNECTION REJECT message has been sent, all context information for the UE may be deleted in UTRAN.

8.1.3.5 Cell re-selection or T300 timeout

- if the UE has not yet received an RRC CONNECTION SETUP message with the value of the IE "Initial UE identity" equal to the value of the variable INITIAL_UE_IDENTITY; and
- if cell re-selection or expiry of timer T300 occurs;

the UE shall:

- check the value of V300; and
  - if V300 is equal to or smaller than N300:
    - if cell re-selection occurred:
      - set CFN in relation to SFN of current cell according to subclause 8.5.15;
    - set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.3;
    - perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13; and
    - apply the given Access Service Class when accessing the RACH;
    - submit a new RRC CONNECTION REQUEST message to lower layers for transmission on the uplink CCCH;
    - increment counter V300;
    - restart timer T300 when the MAC layer indicates success or failure to transmit the message;

- if V300 is greater than N300:
  - enter idle mode.
  - consider the procedure as unsuccessful;
  - ~~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;
  - The procedure ends.

8.1.3.6 Reception of an RRC CONNECTION SETUP message by the UE

The UE shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION SETUP message with the value of the variable INITIAL_UE_IDENTITY.

If the values are different, the UE shall:

- ignore the rest of the message;

If the values are identical, the UE shall:

- stop timer T300, and act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following;
  - if the UE will be in the CELL_FACH state at the conclusion of this procedure:
    - if the IE "Frequency info" is included:
      - select a suitable UTRA cell according to [4] on that frequency;
    - select PRACH according to subclause 8.6.6.2;
    - select Secondary CCPCH according to subclause 8.6.6.5;
    - ~~if the contents of the variable C_RNTI is empty:~~
      - ~~perform a cell update procedure according to subclause 8.3.1 and then continue with the procedure as indicated in the following;~~
- enter a state according to subclause 8.6.3.3;
- submit an RRC CONNECTION SETUP COMPLETE message to the lower layers on the uplink DCCH after successful state transition per subclause 8.6.3.3, with the contents set as specified below:
  - set the IE "RRC transaction identifier" to
    - the value of "RRC transaction identifier" in the entry for the RRC CONNECTION SETUP message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - clear that entry.
  - calculate START values for each CN domain according to subclause 8.5.9 and include the result in the IE "START list";
  - if the IE "UE radio access FDD capability update requirement" included in the RRC CONNECTION SETUP message has the value TRUE:

    include its UTRAN-specific FDD capabilities and its UTRAN –specific capabilities common to FDD and TDD in the IE "UE radio access capability";
- if the IE "UE radio access TDD capability update requirement" included in the RRC CONNECTION SETUP message has the value TRUE:

include its UTRAN-specific TDD capabilities and its UTRAN –specific capabilities common to FDD and TDD in the IE "UE radio access capability";

- if the IE "System specific capability update requirement list" is present in the RRC CONNECTION SETUP message:
  - include its inter-RAT capabilities for the requested systems in the IE "UE system specific capability".

When of the RRC CONNECTION SETUP COMPLETE message has been submitted to lower layers for transmission the UE shall:

- if the UE has entered CELL_FACH state:
  - start timer T305 using its initial value if periodical ~~cell~~ update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" ~~requested~~ in system information block type 1;
- update its variable UE_CAPABILITY_TRANSFERRED which UE capabilities it has transmitted to the UTRAN;
- if the IE "Transport format combination subset" was not included in the RRC CONNECTION SETUP message:
  - set the IE "Current TFC subset" in the variable TFS_SUBSET to "Full transport format combination set";
- set the "Status" in the variable CIPHERING_STATUS to "Not started";
- set the "Reconfiguration" in the variable CIPHERING_STATUS to FALSE;
- set the "Status" in the variable INTEGRITY_ PROTECTION_INFO to "Not started";
- set the "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to "Never been active";
- set the "Reconfiguration" in the variable INTEGRITY_ PROTECTION _INFO to FALSE;
- set the variable CELL_UPDATE_STARTED to FALSE;
- set the variable ORDERED_RECONFIGURATION to FALSE;
- set the variable FAILURE_INDICATOR to FALSE;
- set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
- set the variable INVALID_CONFIGURATION to FALSE;
- set the variable PROTOCOL_ERROR_INDICATOR to FALSE;
- set the variable PROTOCOL_ERROR_REJECT to FALSE;
- set the variable TGSN_REPORTED to FALSE;
- set the variable UNSUPPORTED_CONFIGURATION to FALSE;
- clear all optional IEs in all variables, except those optional IEs that are set in this procedure;
- consider the procedure as successful;

and the procedure ends.

8.1.3.7 Physical channel failure or cell re-selection

- If the UE failed to establish, per subclause 8.5.4, the physical channel(s) indicated in the RRC CONNECTION SETUP message; or
- If the UE performs cell re-selection, or~~:~~
- if the UE will be in the CELL_FACH state at the conclusion of this procedure; and

- if the received RRC CONNECTION SETUP message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE; or

- if the contents of the variable C_RNTI is empty

- after having received an RRC CONNECTION SETUP message with the value of the IE "Initial UE identity" equal to the value of the variable INITIAL_UE_IDENTITY; and [Note to Hans: Indentation changed to B1]

- before the RRC CONNECTION SETUP COMPLETE message is delivered to lower layers for transmission; [Note to Hans: Indentation changed to B1]

the UE shall:

- clear the entry for the RRC CONNECTION SETUP message in the table "Accepted transactions" in the variable TRANSACTIONS;

- check the value of V300, and:

  - if V300 is equal to or smaller than N300:

    - set CFN in relation to SFN of current cell according to subclause 8.5.15;

    - set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.3;

    - perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;

    - submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;

    - increment counter V300; and

    - restart timer T300 when the MAC layer indicates success or failure in transmitting the message;

  - if V300 is greater than N300:

    - enter idle mode;

    - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;

    - consider the procedure as unsuccessful;

    - ~~A connection failure may be indicated to the non-access stratum;~~

    - The procedure ends.

8.1.3.8 Invalid RRC CONNECTION SETUP message, unsupported configuration or invalid configuration

If the UE receives an RRC CONNECTION SETUP message which contains an IE "Initial UE identity" with a value which is identical to the value of the variable INITIAL_UE_IDENTITY, but the RRC CONNECTION SETUP message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- clear the entry for the RRC CONNECTION SETUP message in the table "Rejected transactions" in the variable TRANSACTIONS and proceed as below;

If the UE receives an RRC CONNECTION SETUP message which contains an IE "Initial UE identity" with a value which is identical to the value of the variable INITIAL_UE_IDENTITY, and:

- the RRC CONNECTION SETUP message contained a configuration the UE does not support; and/or

- the variable UNSUPPORTED_CONFIGURATION becomes set to TRUE ~~of~~due to the received RRC CONNECTION SETUP message; and/or

- the variable INVALID_CONFIGURATION becomes set to TRUE ~~of~~due to the received RRC CONNECTION SETUP message;
- the UE shall:
  - clear the entry for the RRC CONNECTION SETUP message in the table “Accepted transactions” in the variable TRANSACTIONS and proceed as below;

~~The UE shall check the value of V300, and~~

- if V300 is equal to or smaller than N300:
  - set the variable PROTOCOL_ERROR_INDICATOR to TRUE;
  - set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.3;
  - perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
  - submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;
  - increment counter V300; and
  - restart timer T300 when the MAC layer indicates success or failure in transmitting the message;
- if V300 is greater than N300:
  - enter idle mode;.
  - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
  - consider the procedure as unsuccessful;
  - ~~A connection failure may be indicated to the non-access stratum;~~
  - The procedure ends.

8.1.3.9 Reception of an RRC CONNECTION REJECT message by the UE

When the UE receives an RRC CONNECTION REJECT message on the downlink CCCH, it shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION REJECT message with the value of the variable INITIAL_UE_IDENTITY:

If the values are different, the UE shall ignore the rest of the message;

If the values are identical, the UE shall stop timer T300 and:

- if the IE "wait time" <> '0', and
  - if the IE "frequency info" is present and:
    - if V300 is equal to or smaller than N300:
      - initiate cell selection on the designated UTRA carrier;
      - after having selected and camped on a cell:
        - set CFN in relation to SFN of current cell according to subclause 8.5.15;
        - set the contents of the RRC CONNECTION REQUEST message according to subclause 8.1.3.3;
        - perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
        - transmit an RRC CONNECTION REQUEST message on the uplink CCCH;

        - reset counter V300;
        - start timer T300 when the MAC layer indicates success or failure in transmitting the message;
        - disable cell reselection to original carrier until the time stated in the IE "wait time" has elapsed;
    - if a cell selection on the designated carrier fails:
        - wait for the time stated in the IE "wait time";
        - set CFN in relation to SFN of current cell according to subclause 8.5.15;
        - set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.3;
        - perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
        - then submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH of the original serving cell;
        - increment counter V300;
        - restart timer T300 when the MAC layer indicates success or failure to transmit the message;
  - if V300 is greater than N300:
    - enter idle mode;
    - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
    - consider the procedure as unsuccessful;
    - ~~A connection failure may be indicated to the non-access stratum;~~
    - The procedure ends.
- if the IE "inter-RAT info" is present and:
  - if V300 is equal to or smaller than N300:
    - perform cell selection in the designated system;
    - delay cell reselection to the original system until the time stated in the IE " wait time" has elapsed.
    - if cell selection in the designated system fails:
        - wait at least the time stated in the IE "wait time";
        - set CFN in relation to SFN of current cell according to subclause 8.5.15;
        - set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.2.
        - perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
        - then submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;
        - increment counter V300;
        - restart timer T300 when the MAC layer indicates success or failure to transmit the message;
  - if V300 is greater than N300:
    - enter idle mode;
    - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
    - consider the procedure as unsuccessful;

- ~~A connection failure may be indicated to the non-access stratum;~~
- The procedure ends.

- If neither the IEs "frequency info" nor "inter-RAT info" are present and:
  - if V300 is equal to or smaller than N300:
    - wait at least the time stated in the IE "wait time";
    - set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.2;
    - perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
    - submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;
    - increment counter V300;
    - restart timer T300 when the MAC layer indicates success or failure to transmit the message;
  - if V300 is greater than N300:
    - enter idle mode;
    - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
    - consider the procedure as unsuccessful;
    - ~~A connection failure may be indicated to the non-access stratum;~~
    - The procedure ends.
- if the IE "wait time" = '0':
  - enter idle mode;
  - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
  - consider the procedure as unsuccessful;
  - ~~A connection failure may be indicated to the non-access stratum;~~
  - The procedure ends.

8.1.3.10 Invalid RRC CONNECTION REJECT message

If the UE receives an RRC CONNECTION REJECT message which contains an IE "Initial UE identity" with a value which is identical to the value of the IE "Initial UE identity" in the most recent RRC CONNECTION REQUEST message sent by the UE; but the RRC CONNECTION REJECT message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

The UE shall:

- if the IE "wait time" is <> 0, and:
  - if V300 is equal to or smaller than N300:
    - wait for the time stated in the IE "wait time";
    - set the variable PROTOCOL_ERROR_INDICATOR to TRUE;
    - set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.3;

- perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
- submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;
- increment counter V300;
- restart timer T300 when the MAC layer indicates success or failure to transmit the message;
- if V300 is greater than N300:
  - enter idle mode;
  - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
  - consider the procedure as unsuccessful;
  - ~~A connection failure may be indicated to the non-access stratum;~~
  - The procedure ends.
- if the IE "wait time" is = 0:
  - enter idle mode;
    - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
    - consider the procedure as unsuccessful;
    - ~~A connection failure may be indicated to the non-access stratum;~~
    - The procedure ends.

8.1.4 RRC connection release

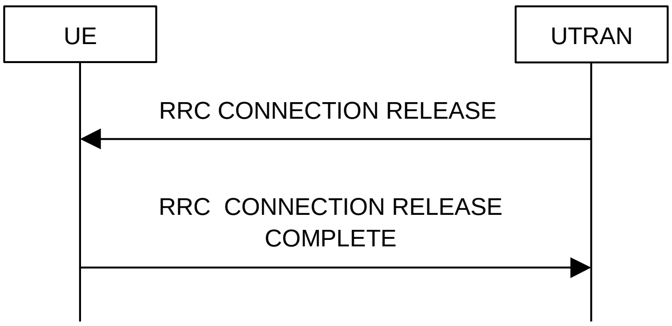


Figure 10: RRC Connection Release procedure on the DCCH

Figure 11: RRC Connection Release procedure on the CCCH

8.1.4.1 General

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

8.1.4.2 Initiation

When the UE is in state CELL_DCH or CELL_FACH, the UTRAN may at anytime initiate an RRC connection release by transmitting an RRC CONNECTION RELEASE message using UM RLC.

When UTRAN transmits an RRC CONNECTION RELEASE message in response to a ~~RRC CONNECTION RE-ESTABLISHMENT REQUEST (subclause 8.1.5),~~ CELL UPDATE (subclause 8.3.1) or URA UPDATE (subclause 8.3.2) message from the UE, UTRAN should use the downlink CCCH to transmit the message. In all other cases the downlink DCCH should be used.

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

8.1.4.3 Reception of an RRC CONNECTION RELEASE message by the UE

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

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

- in state CELL_DCH:
  - initialise the counter V308 to zero;
  - set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry.
  - submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using UM RLC on the DCCH to the UTRAN;
  - if the IE "Rplmn information" is present:
    - the UE ~~can~~may:
      - store the IE on the ME together with the PLMN id for which it applies;
    - the UE may then:
      - utilise this information, typically indicating where a number of BCCH frequency ranges of a RAT may be expected to be found, during subsequent Rplmn selections of the indicated PLMN;
  - start timer T308 when the RRC CONNECTION RELEASE COMPLETE message is sent on the radio interface.
- in state CELL_FACH:
  - if the RRC CONNECTION RELEASE message was received on the DCCH:
    - set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - clear that entry;
    - submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using AM RLC on the DCCH to the UTRAN.
    - when the successful transmission of the RRC CONNECTION RELEASE COMPLETE message has been confirmed by the lower layers:
      - release all its radio resources; and

      - indicate the release of ~~all~~ the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to ~~the non-access stratum~~upper layers; and
      - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
      - clear the variable ESTABLISHED_RABS;
      - pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to upper layers~~the non-access stratum~~;
      - enter idle mode;
      - perform the actions specified in subclause 8.5.2 when entering idle mode;
    - And the procedure ends.
  - if the RRC CONNECTION RELEASE message was received on the CCCH:
    - release all its radio resources;
    - indicate the release of the established ~~all~~ signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to ~~the non-access stratum~~upper layers;
      - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
      - clear the variable ESTABLISHED_RABS;
    - pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to upper layers~~the non-access stratum~~;
    - enter idle mode;
    - perform the actions specified in subclause 8.5.2 when entering idle mode;
    - And the procedure ends.

8.1.4.4 Invalid RRC CONNECTION RELEASE message

If the RRC CONNECTION RELEASE message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, and if the "protocol error cause" in PROTOCOL_ERROR_INFORMATION is set to any cause value except "ASN.1 violation or encoding error", the UE shall perform procedure specific error handling as follows:

The UE shall:

- ignore any IE(s) causing the error but treat the rest of the RRC CONNECTION RELEASE message as normal according to subclause 8.1.4.3, with an addition of the following actions;
  - if the RRC CONNECTION RELEASE message was received on the DCCH:
    - set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Rejected transactions" in the variable TRANSACTIONS; and
    - clear that entry.
    - include the IE "Error indication" in the RRC CONNECTION RELEASE COMPLETE message with:
      - the IE "Failure cause" set to the cause value "Protocol error" and
      - the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION;

8.1.4.5 Cell re-selection or radio link failure

If the UE performs cell re-selection or the radio link failure criteria in subclause 8.5.6 is met at any time during the RRC connection release procedure and the UE has not yet entered idle mode, the UE shall perform a cell update procedure according to subclause 8.3.1.

8.1.4.6 Expiry of timer T308, unacknowledged mode transmission

When in state CELL_DCH and the timer T308 expires, the UE shall:

- increment V308 by one;
- if V308 is equal to or smaller than N308:
  - retransmit the RRC CONNECTION RELEASE COMPLETE message;
- if V308 is greater than N308:
  - release all its radio resources;
  - indicate the release of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - perform the actions specified in subclause 8.5.2 when entering idle mode;
  - And the procedure ends.

8.1.4.7 ~~Successful transmission of the RRC CONNECTION RELEASE COMPLETE message, acknowledged mode transmission~~Void

~~When acknowledged mode was used and RLC has confirmed the transmission of the RRC CONNECTION RELEASE COMPLETE message the UE shall:~~

- ~~release all its radio resources;~~
- ~~enter idle mode;~~
- ~~perform the actions specified in subclause 8.5.2 when entering idle mode;~~
- ~~And the procedure ends.~~

8.1.4.8 Reception of an RRC CONNECTION RELEASE COMPLETE message by UTRAN

When UTRAN receives an RRC CONNECTION RELEASE COMPLETE message from the UE, it should:

- release all UE dedicated resources and the procedure ends on the UTRAN side.

8.1.4.9 Unsuccessful transmission of the RRC CONNECTION RELEASE COMPLETE message, acknowledged mode transmission

When acknowledged mode was used and RLC does not succeed in transmitting the RRC CONNECTION RELEASE COMPLETE message, the UE shall:

- release all its radio resources;

- indicate the release of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- enter idle mode;
- perform the actions specified in subclause 8.5.2 when entering idle mode;
- And the procedure ends.

8.1.4.10 Detection of loss of dedicated physical channel by UTRAN in CELL_DCH state

If the release is performed from the state CELL_DCH, and UTRAN detects loss of the dedicated physical channel according to subclause 8.5.6, UTRAN may release all UE dedicated resources, even if no RRC CONNECTION RELEASE COMPLETE message has been received.

8.1.4.11 Failure to receive RRC CONNECTION RELEASE COMPLETE message by UTRAN

If UTRAN does not receive any RRC CONNECTION RELEASE COMPLETE message, it should release all UE dedicated resources.

8.1.5 Void

8.1.6 Transmission of UE capability information

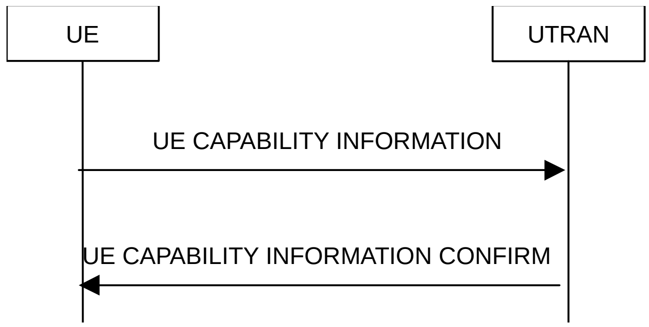


Figure 12: Transmission of UE capability information, normal flow

8.1.6.1 General

The UE capability update procedure is used by the UE to convey UE specific capability information to the UTRAN.

8.1.6.2 Initiation

The UE shall initiate the UE capability update procedure in the following situations:

- the UE receives a UE CAPABILITY ENQUIRY message from the UTRAN;
- while in connected mode the UE capabilities change compared to those stored in the variable UE_CAPABILITY_TRANSFERRED

If the UE CAPABILITY INFORMATION message is sent in response to a UE CAPABILITY ENQUIRY message, the UE shall:

- include the IE "RRC transaction identifier"; and
- set it to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY ENQUIRY message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- include the UTRAN-specific UE capability information elements into the IE "UE radio capability", according to the requirement given in the IE "Capability update requirement" in the UE CAPABILITY ENQUIRY message;
- include one or more inter-RAT classmarks into the IE "UE system specific capability", according to the requirement given in the IE "Capability update requirement" in the UE CAPABILITY ENQUIRY message.

If the UE CAPABILITY INFORMATION message is sent because one or more of the UE capabilities change compared to those stored in the variable UE_CAPABILITY_TRANSFERRED while in connected state, the UE shall include the information elements associated with the capabilities that have changed in the UE CAPABILITY INFORMATION message.

If the UE is in CELL_PCH or URA_PCH state, it shall first perform a cell update procedure using the cause "uplink data transmission", see subclause 8.3.1.

The UE RRC shall submit the UE CAPABILITY INFORMATION message to the lower layers for transmission on the uplink DCCH using AM RLC. When the message has been sent on the radio interface the UE RRC shall start timer T304 and reset counter V304.

8.1.6.3 Reception of an UE CAPABILITY INFORMATION message by the UTRAN

Upon reception of a UE CAPABILITY INFORMATION message, the UTRAN should transmit a UE CAPABILITY INFORMATION CONFIRM message on the downlink DCCH using UM or AM RLC. After the UE CAPABILITY INFORMATION CONFIRM message has been submitted to the lower layers for transmission, the procedure is complete.

8.1.6.4 Reception of the UE CAPABILITY INFORMATION CONFIRM message by the UE

Upon reception of a UE CAPABILITY INFORMATION CONFIRM message, the UE shall:

- stop timer T304;
- update its variable UE_CAPABILITY_TRANSFERRED with the UE capabilities it has last transmitted to the UTRAN during the current RRC connection.

8.1.6.5 Invalid UE CAPABILITY INFORMATION CONFIRM message

If the UE receives a UE CAPABILITY INFORMATION CONFIRM message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- stop timer T304;
- transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- include the IE "Identification of received message"; and
- set the IE "Received message type" to UE CAPABILITY INFORMATION CONFIRM; and
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY INFORMATION CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- when the RRC STATUS message has been submitted to lower layers for transmission:
  - restart timer T304 and ~~resume normal operation~~ continue with any ongoing procedures or processes as if the invalid UE CAPABILITY INFORMATION CONFIRM message has not been received.

8.1.6.6 T304 timeout

Upon expiry of timer T304, the UE shall check the value of V304 and:

- if V304 is smaller than or equal to N304:
  - retransmit a UE CAPABILITY INFORMATION message with the IEs as set in the last unsuccessful attempt;
  - restart timer T304;
  - increment counter V304;
- if V304 is greater than N304:
  - assume that radio link failure has occurred;
  - initiate the ~~RRC connection re-establishment~~Cell Update procedure as specified in subclause 8.3.1, using the cause "Radio link failure".

8.1.7 UE capability enquiry

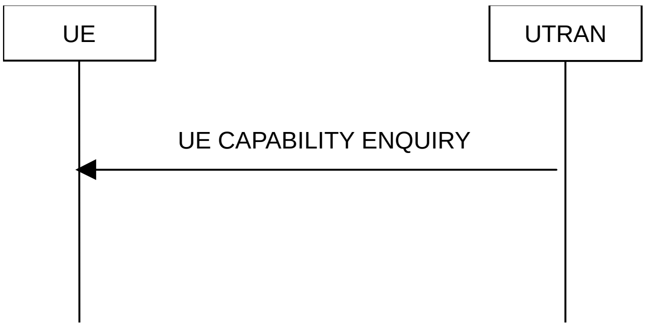


Figure 13: UE capability enquiry procedure, normal flow

8.1.7.1 General

The UE capability enquiry can be used to request the UE to transmit its capability information related to any radio access network that is supported by the UE.

8.1.7.2 Initiation

The UE capability enquiry procedure is initiated by the UTRAN by transmitting a UE CAPABILITY ENQUIRY message on the DCCH using UM or AM RLC.

8.1.7.3 Reception of an UE CAPABILITY ENQUIRY message by the UE

Upon reception of an UE CAPABILITY ENQUIRY message, the UE shall initiate the transmission of UE capability information procedure, which is specified in subclause 8.1.6.

8.1.7.4 Invalid UE CAPABILITY ENQUIRY message

If the UE receives a UE CAPABILITY ENQUIRY message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- include the IE "Identification of received message"; and
- set the IE "Received message type" to UE CAPABILITY ENQUIRY; and
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY ENQUIRY message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the RRC STATUS message has been submitted to lower layers for transmission:
  - ~~resume normal operation~~continue with the ongoing processes and procedures as if the invalid UE CAPABILITY ENQUIRY message has not been received.

8.1.8 Initial Direct transfer

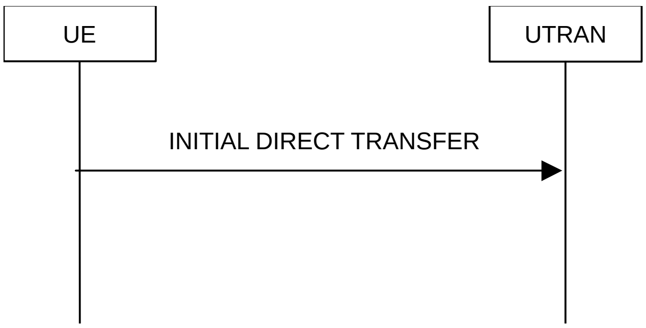


Figure 14: Initial Direct transfer in the uplink, normal flow

8.1.8.1 General

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

8.1.8.2 Initiation of Initial direct transfer procedure in the UE

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

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

- set the variable ESTABLISHMENT_CAUSE to the cause for establishment indicated by upper layers;
- perform an RRC connection establishment procedure, according to subclause 8.1.3;
- if the RRC connection establishment procedure was not successful:
  - indicate failure to establish the signalling connection to upper layers and end the procedure;
- when the RRC connection establishment procedure is completed successfully:
  - continue with the initial direct transfer procedure as below;

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

- perform a cell update procedure, according to subclause 8.3.1, using the cause "uplink data transmission";
- when the cell update procedure completed successfully:

- continue with the initial direct transfer procedure as below.

The UE shall, in the INITIAL DIRECT TRANSFER message:

- set the IE “NAS message” as received from upper layers; and
- ~~The UE shall~~ set the IE "CN domain identity" as indicated by the upper layers.; and
- ~~The UE shall~~ set the IE "Intra Domain NAS Node Selector" as indicated by the upper layers.

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

The UE shall transmit the INITIAL DIRECT TRANSFER message on the uplink DCCH using AM RLC on RB 3.When the INITIAL DIRECT TRANSFER message has been submitted to lower layers for transmission:

- the UE shall confirm the establishment of a signalling connection to ~~the~~ upper layers~~ entity for the particular CN domain~~; and
- add the signalling connection with the identity indicated by the IE “CN domain identity” in the variable ESTABLISHED_SIGNALLING_CONNECTIONS; and
- the procedure ends.

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

A new signalling connection request may be received from ~~the non-access stratum~~upper layers subsequent to the indication of the release of a previously established signalling connection to ~~the non-access stratum~~upper layers. From the time of the indication of release to ~~the non-access stratum~~upper layers until the UE has entered idle mode, any such ~~non-access stratum~~upper layer request to establish a new signalling connection shall be queued. This request shall be processed after the UE has entered idle mode.

8.1.8.3 Reception of INITIAL DIRECT TRANSFER message by the UTRAN

On reception of the INITIAL DIRECT TRANSFER message the NAS message should be routed using the IE "CN Domain Identity". .A UTRAN complying with this version of the protocol should ignore the IE "Intra Domain NAS Node Selector".

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

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

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

8.1.9 Downlink Direct transfer

Figure 15: Downlink Direct transfer, normal flow

8.1.9.1 General

The downlink direct transfer procedure is used in the downlink direction to carry ~~higher~~ upper layer (NAS) messages over the radio interface.

8.1.9.2 Initiation of downlink direct transfer procedure in the UTRAN

In the UTRAN, the direct transfer procedure is initiated when the upper layers request the transfer of a NAS message after the initial signalling connection is established. The UTRAN may also initiate the downlink direct transfer procedure when another RRC procedure is ongoing, and in that case the state of the latter procedure shall not be affected. The UTRAN shall transmit the DOWNLINK DIRECT TRANSFER message on the downlink DCCH using AM RLC on RB 3 or RB 4. The UTRAN should select the RB according to the following:

- If ~~the non-access stratum~~upper layers indicate~~s~~ "low priority" for this message, RB 4 should be selected, if available. Specifically, for a GSM-MAP based CN, RB 4 should, if available, be selected when "SAPI 3" is requested. RB 3 should be selected when RB 4 is not available.

- If ~~the non-access stratum~~upper layers indicate~~s~~ "high priority" for this message, RB 3 should be selected. Specifically, for a GSM-MAP based CN, RB 3 should be selected when "SAPI 0" is requested.

The UTRAN sets the IE "CN Domain Identity" to indicate, which CN domain the NAS message is originated from.

8.1.9.3 Reception of a DOWNLINK DIRECT TRANSFER message by the UE

Upon reception of the DOWNLINK DIRECT TRANSFER message, the UE RRC shall, using the IE "CN Domain Identity", route the contents of the ~~higher layer PDU~~IE "NAS message" and the value of the IE"CN Domain Identity" to ~~the correct higher~~ upper layer~~s~~ ~~entity~~.

The UE shall clear the entry for the DOWNLINK DIRECT TRANSFER message in the table "Accepted transactions" in the variable TRANSACTIONS.

When the UE receives a DOWNLINK DIRECT TRANSFER message, it shall not affect the state of any other ongoing RRC procedures when not stated otherwise elsewhere.

8.1.9.3a No signalling connection exists

If the UE receives a DOWNLINK DIRECT TRANSFER message, and the signalling connection identified with the IE "CN domain identity" does not exist according to the variable ESTABLISHED_SIGNALLING_CONNECTIONS, the UE shall:

- ignore the content of the DOWNLINK DIRECT TRANSFER message;

- transmit an RRC STATUS message on the uplink DCCH using AM RLC;

- include the IE "Identification of received message"; and

- set the IE "Received message type" to DOWNLINK DIRECT TRANSFER; and

- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the DOWNLINK DIRECT TRANSFER message in the table "Accepted transactions" in the variable TRANSACTIONS; and

- clear that entry;

- include the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state".

When the RRC STATUS message has been submitted to lower layers for transmission, the UE shall ~~resume normal operation~~continue with any ongoing processes and procedures as if the DOWNLINK DIRECT TRANSFER message has not been received.

8.1.9.4 Invalid DOWNLINK DIRECT TRANSFER message

If the UE receives a DOWNLINK DIRECT TRANSFER message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- include the IE "Identification of received message"; and
- set the IE "Received message type" to DOWNLINK DIRECT TRANSFER; and
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the DOWNLINK DIRECT TRANSFER message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.

When the RRC STATUS message has been submitted to lower layers for transmission, the UE shall ~~resume normal operation~~continue with any ongoing processes and procedures as if the invalid DOWNLINK DIRECT TRANSFER message has not been received.

8.1.10 Uplink Direct transfer

Figure 16: Uplink Direct transfer, normal flow

8.1.10.1 General

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

8.1.10.2 Initiation of uplink direct transfer procedure in the UE

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

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

- perform a cell update procedure, according to subclause 8.3.1, using the cause "uplink data transmission";
- when the cell update procedure has been completed successfully:
  - continue with the uplink direct transfer procedure as below.

The UE shall transmit the UPLINK DIRECT TRANSFER message on the uplink DCCH using AM RLC on RB 3 or RB 4. The UE shall select the RB according to the following:

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

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

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

When the UPLINK DIRECT TRANSFER message has been submitted to lower layers for transmission the procedure ends.

8.1.10.3 Reception of UPLINK DIRECT TRANSFER message by the UTRAN

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

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

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

8.1.11 UE dedicated paging

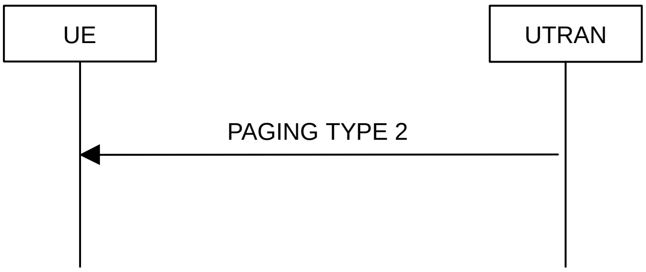


Figure 17: UE dedicated paging

8.1.11.1 General

This procedure is used to transmit dedicated paging information to one UE in connected mode in CELL_DCH or CELL_FACH state. Upper layers in the network may request initiation of paging.

8.1.11.2 Initiation

For a UE in CELL_DCH or CELL_FACH state, UTRAN initiates the procedure by transmitting a PAGING TYPE 2 message on the DCCH using AM RLC. When not stated otherwise elsewhere, the UTRAN may initiate the UE dedicated paging procedure also when another RRC procedure is ongoing, and in that case the state of the latter procedure shall not be affected.

8.1.11.3 Reception of a PAGING TYPE 2 message by the UE

When the UE receives a PAGING TYPE 2 message, it shall not affect the state of any other ongoing RRC procedures, when not stated otherwise elsewhere.

The UE shall

~~- indicate that a PAGING TYPE 2 message has been received andreception of paging to upper layers; and~~

- indicate reception of paging and forward the IE "CN domain identity", ~~corresponding~~ the IE “~~p~~Paging cause” and the IE “~~p~~Paging record type identifier” to ~~the~~ upper layers ~~entity indicated by the IE "CN domain identity"~~.

The UE shall clear the entry for the PAGING TYPE 2 message in the table "Accepted transactions" in the variable TRANSACTIONS.

8.1.11.4 Invalid PAGING TYPE 2 message

If the UE receives a PAGING TYPE 2 message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- include the IE "Identification of received message"; and
- set the IE "Received message type" to PAGING TYPE 2; and
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the PAGING TYPE 2 message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- when the RRC STATUS message has been submitted to lower layers for transmission:
  - ~~resume normal operation~~continue with any ongoing processes and procedures as if the invalid PAGING TYPE 2 message has not been received.

8.1.12 Security mode control

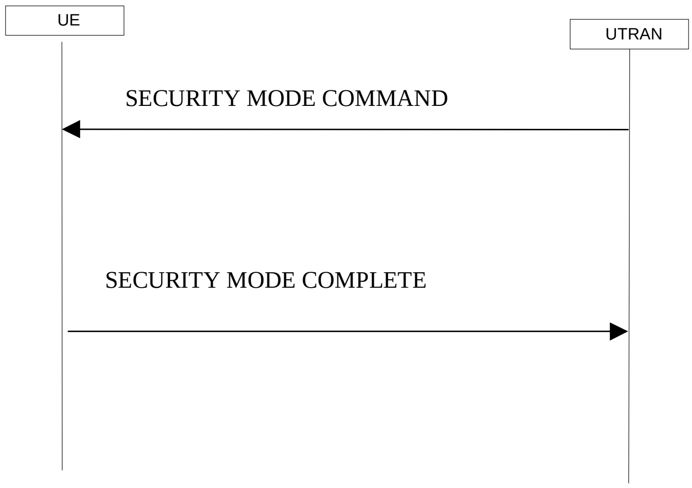


Figure 18: Security mode control procedure

8.1.12.1 General

The purpose of this procedure is to trigger the stop or start of ciphering or to command the restart of the ciphering with a new ciphering configuration, ~~both for the signalling link and~~ for ~~any of~~all the radio bearers.

It is also used to start integrity protection or to modify the integrity protection configuration for uplink and downlink signalling.

8.1.12.2 Initiation

8.1.12.2.1 Ciphering configuration change

To stop or start/restart ciphering, UTRAN sends a SECURITY MODE COMMAND message on the downlink DCCH in AM RLC using the ~~old~~ most recent ciphering configuration. If no ~~old~~ such ciphering configuration exists then the SECURITY MODE COMMAND is not ciphered.

Prior to sending the SECURITY MODE COMMAND, for the CN domain indicated in the IE "CN domain identity" in the SECURITY MODE COMMAND, UTRAN should:

- suspend all radio bearers using RLC-AM and RLC-UM;
- suspend all signalling radio bearers using RLC-AM and RLC-UM, except the signalling radio bearer used to send the SECURITY MODE COMMAND message on the downlink DCCH in RLC-AM;
- set, for the signalling radio bearer used to send the SECURITY MODE COMMAND, the "RLC send sequence number" in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info", at which time the new ciphering configuration shall be applied;
- include "Ciphering activation time for DPCH" in IE "Ciphering mode info" when a DPCH exists for radio bearers using transparent mode RLC;
- set, for each suspended radio bearer and signalling radio bearer, the "RLC send sequence number" in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info", at which time the new ciphering configuration shall be applied.

While suspended, radio bearers and signalling radio bearers shall not deliver RLC PDUs with sequence number greater than or equal to the number in IE "Radio bearer downlink ciphering activation time info".

When the successful delivery of the SECURITY MODE COMMAND has been confirmed by RLC, UTRAN shall:

- resume all the suspended radio bearers and signalling radio bearers. The old ciphering configuration shall be applied for the transmission of RLC PDUs with RLC sequence number less than the number indicated in the IE "Radio bearer downlink ciphering activation time info", as sent to the UE. The new ciphering configuration shall be applied for the transmission of RLC PDUs with RLC sequence number greater than or equal to the number indicated in IE "Radio bearer downlink ciphering activation time info", sent to the UE.

8.1.12.2.2 Integrity protection configuration change

To start or modify integrity protection, UTRAN sends a SECURITY MODE COMMAND message on the downlink DCCH in AM RLC using the new integrity protection configuration.

8.1.12.3 Reception of SECURITY MODE COMMAND message by the UE

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

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

- suspend all radio bearers and signalling radio bearers (except the signalling radio bearer used to receive the SECURITY MODE COMMAND message on the downlink DCCH in RLC-AM) using RLC-AM or RLC-UM that belong to the CN domain indicated in the IE "CN domain identity", with RLC sequence number greater than or equal to the number in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info";
- set the IE "RRC transaction identifier" in the SECURITY MODE COMPLETE message to the value of "RRC transaction identifier" in the entry for the SECURITY MODE CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- if the SECURITY MODE CONTROL message contained the IE “Ciphering mode info”~~if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set~~:

- include and set the IE "Radio bearer uplink ciphering activation time info" to the value of the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO~~that variable~~, for the respective radio bearer and signalling radio bearer;

- if the SECURITY MODE CONTROL message contained the IE “Integrity protection mode info” with the IE “Integrity protection mode command” set to “Modify”:

  - include and set the IE "Integrity protection activation info" to the value of the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

- when the radio bearers and signalling radio bearers have been suspended:

  - send a SECURITY MODE COMPLETE message on the uplink DCCH in AM RLC, using the old ciphering and the new integrity protection configurations;

- when the successful delivery of the SECURITY MODE COMPLETE message has been confirmed by RLC:

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

  - if the SECURITY MODE CONTROL message contained the IE “Ciphering mode info”, set the IE “Reconfiguration” in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;

  - if the SECURITY MODE CONTROL message contained the IE “Integrity protection mode info”, set the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

  - ~~clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and~~ the procedure ends. If a RLC reset or re-establishment occurs after the SECURITY MODE COMPLETE message has been confirmed by RLC, but before the activation time for the new ciphering configuration has been reached, then the activation time shall be ignored and the new ciphering configuration shall be applied immediately after the RLC reset or RLC re-establishment.

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

- if a new integrity protection key has been received:

  - in the downlink:

    - use the new key;

    - set the HFN component of the downlink COUNT-I to zero at the RRC sequence number indicated in IE "Downlink integrity protection activation info" included in the IE "Integrity protection mode info";

  in the uplink:

    use the new key;

    - set the HFN component of the uplink COUNT-I to zero at the RRC sequence number indicated in IE "Uplink integrity protection activation info" included in the IE "Integrity protection mode info";

- if a new ciphering key is available:

  - in the downlink:

    - use the new key;

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

  - in the uplink:

    - use the new key;

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

If the IE "Security capability" is not the same as indicated by the variable UE_CAPABILITY_TRANSFERRED, the UE shall: [Note to Hans: Indentation changed to Normal]

- release all its radio resources~~,~~; [Note to Hans: Indentation changed to B1]
- indicate the release of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- enter idle mode; [Note to Hans: Indentation changed to B1]

~~and the procedure ends on the UE side. Actions the UE shall perform when entering idle mode are given in subclause 8.5.2~~.

- perform actions when entering idle mode as specified in subclause 8.5.2;
- the procedure ends.

8.1.12.4 Cipher activation time too short

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

8.1.12.4a Incompatible simultaneous security reconfiguration

If the variable INCOMPATIBLE_SECURITY_RECONFIGURATION becomes set to TRUE of the received SECURITY MODE CONTROL message, the UE shall:

- transmit a SECURITY MODE FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the SECURITY MODE FAILURE message to the value of "RRC transaction identifier" in the entry for the SECURITY MODE CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "incompatible simultaneous reconfiguration";
- when the successful delivery of the SECURITY MODE FAILURE message has been confirmed by RLC:
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - ~~resume normal operation~~continue with any ongoing processes and procedures as if the invalid SECURITY MODE COMMAND message has not been received and the procedure ends.

8.1.12.4b Cell update procedure during security reconfiguration

If, caused by the received SECURITY MODE CONTROL message,

- the IE “Reconfiguration” in the variable CIPHERING_STATUS is set to TRUE, and/or
- the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO is set to TRUE

and

- a cell update procedure is initiated according to subclause 8.3.1;

the UE shall:

- abort the ongoing integrity and/or ciphering reconfiguration;

- resume data transmission on any suspended radio bearer and signalling radio bearer mapped on RLC-AM or RLC-UM;
- transmit a SECURITY MODE FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the SECURITY MODE FAILURE message to the value of "RRC transaction identifier" in the entry for the SECURITY MODE CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "cell update occurred";
- when the successful delivery of the SECURITY MODE FAILURE message has been confirmed by RLC:
    - if the SECURITY MODE CONTROL message contained the IE "Ciphering mode info", set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
    - if the SECURITY MODE CONTROL message contained the IE "Integrity protection mode info", set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
    - ~~resume normal operation~~continue with any ongoing processes and procedures as if the invalid SECURITY MODE COMMAND message has not been received and the procedure ends.

8.1.12.5 Reception of SECURITY MODE COMPLETE message by the UTRAN

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

- for radio bearers using RLC-AM or RLC-UM:
    - use the old ciphering configuration for received RLC PDUs with RLC sequence number less than the RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent by the UE;
    - use the new ciphering configuration for received RLC PDUs with RLC sequence number greater than or equal to the RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent by the UE;
    - if an RLC reset or re-establishment occurs after the SECURITY MODE COMPLETE message has been received by UTRAN before the activation time for the new ciphering configuration has been reached, ignore the activation time and apply the new ciphering configuration immediately after the RLC reset or RLC re-establishment;
- for radio bearers using RLC-TM:
    - use the new ciphering configuration for the received RLC PDUs at the CFN as indicated in the IE "Ciphering activation time for DPCH" in the IE "Ciphering mode info";
- and the procedure ends.

8.1.12.6 Invalid SECURITY MODE COMMAND message

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

- transmit a SECURITY MODE FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the SECURITY MODE FAILURE message to the value of "RRC transaction identifier" in the entry for the SECURITY MODE CONTROL message in the table "Rejected transactions" in the variable TRANSACTIONS; and

- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- when the successful delivery of the SECURITY MODE FAILURE message has been confirmed by RLC:
  - ~~resume normal operation~~continue with any ongoing processes and procedures as if the invalid SECURITY MODE COMMAND message has not been received and the procedure ends.

8.1.13 Signalling connection release procedure

Figure 19: Signalling connection release procedure, normal case

8.1.13.1 General

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

8.1.13.2 Initiation of SIGNALLING CONNECTION RELEASE by the UTRAN

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

8.1.13.3 Reception of SIGNALLING CONNECTION RELEASE by the UE

Upon reception of a SIGNALLING CONNECTION RELEASE message, the UE shall

- indicate the release of the signalling connection ~~associated with the CN domain identified by~~ and pass the value of the IE "CN domain identity" to ~~the corresponding higher~~upper layers~~ entities.~~
- remove the signalling connection with the identity indicated by the IE “CN domain identity” from the variable ESTABLISHED_SIGNALLING_CONNECTIONS
- ~~The UE shall~~ clear the entry for the SIGNALLING CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS.
- the procedure ends.

8.1.13.4 Invalid SIGNALLING CONNECTION RELEASE message

If the UE receives a SIGNALLING CONNECTION RELEASE message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- include the IE "Identification of received message"; and

- set the IE "Received message type" to SIGNALLING CONNECTION RELEASE;
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the SIGNALLING CONNECTION RELEASE message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;

- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- transmit an RRC STATUS message on the uplink DCCH using AM RLC
- when the RRC STATUS message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid SIGNALLING CONNECTION RELEASE message has not been received.

8.1.14 Signalling connection release request procedure

Figure 20: Signalling connection release request procedure, normal case

8.1.14.1 General

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

8.1.14.2 Initiation

The UE shall initiate the signalling connection release request procedure on receiving a request to release (abort) the signalling connection from ~~higher~~ upper layers.

Upon initiation of the signalling connection release request procedure in CELL_PCH or URA_PCH state, the UE shall:

- perform a cell update procedure, according to subclause 8.3.1, using the cause "uplink data transmission";
- when the cell update procedure completed successfully:
  - continue with the signalling connection release request procedure as below;

The UE shall set the IE "CN Domain Identity" to the value indicated by the upper layers. The value of the IE indicates the CN domain whose associated signalling connection the upper layers are requesting to be released.

The UE shall transmit a SIGNALLING CONNECTION RELEASE REQUEST message on DCCH using AM RLC.

When the SIGNALLING CONNECTION RELEASE REQUEST message has been submitted to lower layers for transmission the procedure ends.

8.1.14.3 Reception of SIGNALLING CONNECTION RELEASE REQUEST by the UTRAN

Upon reception of a SIGNALLING CONNECTION RELEASE REQUEST message, the UTRAN requests the release of the signalling connection from ~~the non-access stratum~~upper layers. ~~The non-access stratum~~Upper layers may then initiate the release of the signalling connection.

8.1.15 Counter check

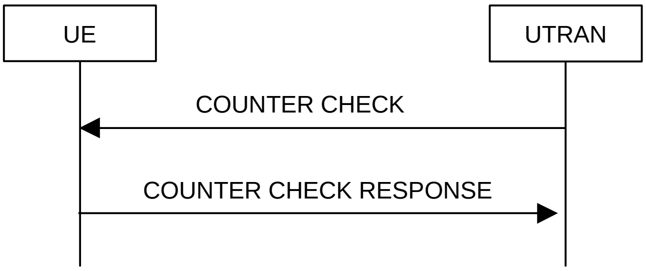


Figure 21: Counter check procedure

8.1.15.1 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 and downlink) ~~during~~ over the duration of the RRC connection is identical at the UTRAN and at the UE (to ~~prevent~~ detect a possible intruder – a 'man-in-the-middle' – from operating). 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. In ~~Release 99~~this version, this procedure is not applied for radio bearers using transparent mode RLC.

8.1.15.2 Initiation

The UTRAN monitors the COUNT-C value associated with 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.

8.1.15.3 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 IE "RB COUNT-C MSB information" in the COUNTER CHECK message to the COUNT-C MSB values of the corresponding radio bearers.

The UE shall

- set the IE "RRC transaction identifier" in the COUNTER CHECK RESPONSE message to the value of "RRC transaction identifier" in the entry for the COUNTER CHECK message in the table "Accepted transactions" in the variable TRANSACTIONS; and

- clear that entry.

If

- the number of radio bearers using UM or AM RLC mode stored in the variable ESTABLISHED_RABS are different from the number of radio bearers in the IE "RB COUNT-C MSB information"; or

- any of the COUNT-C MSB values are different from the mismatched COUNT-C values

the UE shall:

- include these radio bearers in the IE "RB COUNT-C information" in the COUNTER CHECK RESPONSE message;

The UE shall submit a COUNTER CHECK RESPONSE message to lower layers for transmission on the uplink DCCH using AM RLC. When the COUNTER CHECK RESPONSE message has been submitted to lower layers for transmission the procedure ends.

8.1.15.4 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.

8.1.15.5 Cell re-selection

If the UE performs cell re-selection anytime during this procedure it shall, without interrupting the procedure, initiate the cell update procedure according to subclause 8.3.1.

8.1.15.6 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 9, the UE shall perform procedure specific error handling as follows:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- include the IE "Identification of received message"; and
- set the IE "Received message type" to COUNTER CHECK; and
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UE COUNTER CHECK message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the RRC STATUS message has been submitted to lower layers for transmission, the UE shall continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid COUNTER CHECK message has not been received.

8.2 Radio Bearer control procedures

8.2.1 Radio bearer establishment

See subclause 8.2.2 Reconfiguration procedures.

8.2.2 Reconfiguration procedures

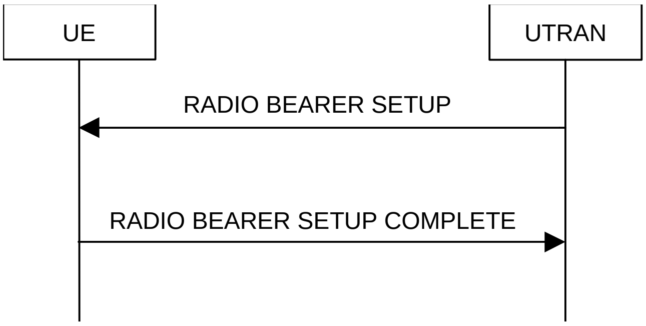


Figure 22: Radio Bearer Establishment, normal case

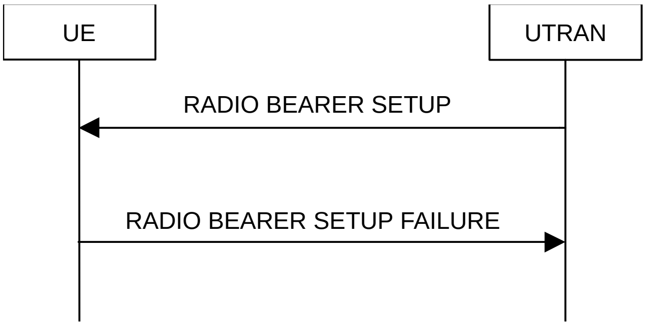


Figure 23: Radio Bearer Establishment, failure case

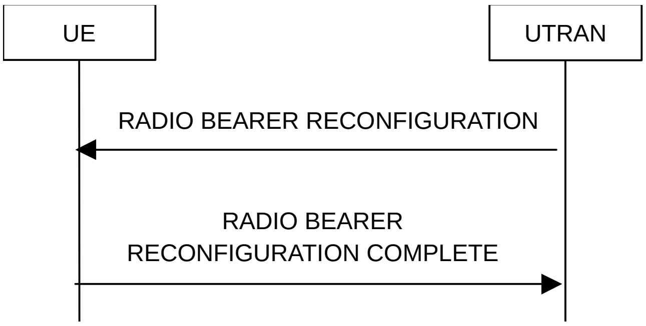


Figure 24: Radio bearer reconfiguration, normal flow

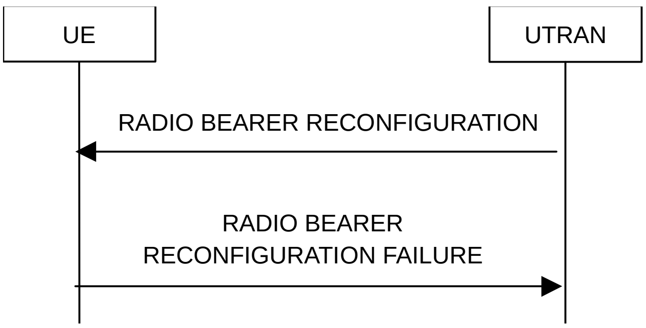


Figure 25: Radio bearer reconfiguration, failure case

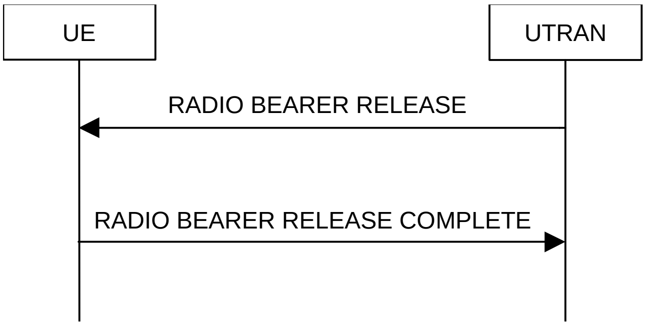


Figure 26: Radio Bearer Release, normal case

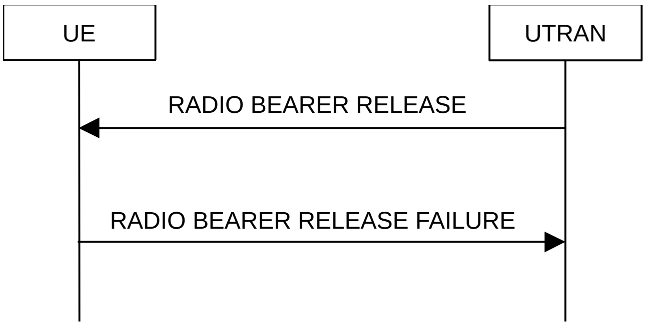


Figure 27: Radio Bearer Release, failure case

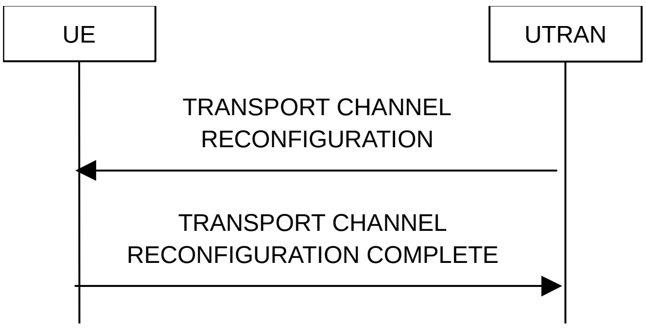


Figure 28: Transport channel reconfiguration, normal flow

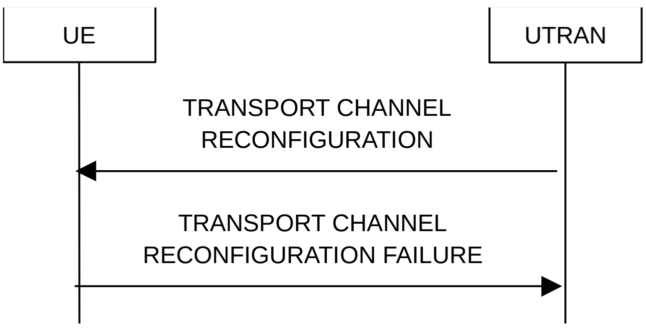


Figure 29: Transport channel reconfiguration, failure case

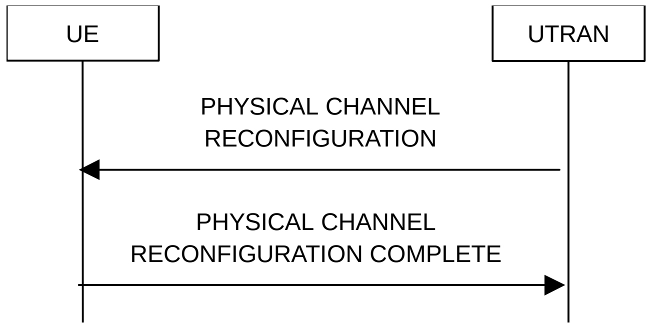


Figure 30: Physical channel reconfiguration, normal flow

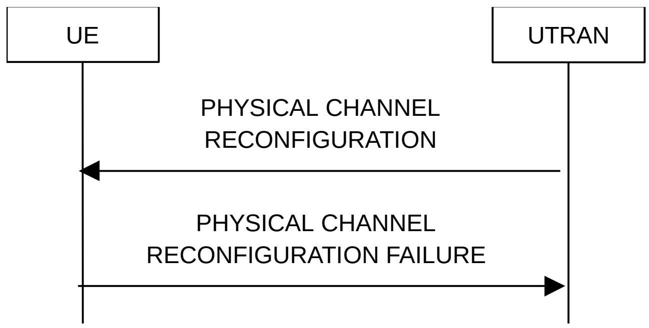


Figure 31: Physical channel reconfiguration, failure case

8.2.2.1 General

Reconfiguration procedures include the following procedures:

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

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

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

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

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

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

While performing any of the above procedures, these procedures may perform a hard handover - see subclause 8.3.5.

8.2.2.2 Initiation

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

- configure new radio links in any new physical channel configuration;
- start transmission and reception on the new radio links;
- for a radio bearer establishment procedure:
  - transmit a RADIO BEARER SETUP message on the downlink DCCH using AM or UM RLC;

- for a radio bearer reconfiguration procedure:
  - transmit a RADIO BEARER RECONFIGURATION message on the downlink DCCH using AM or UM RLC;
- for a radio bearer release procedure:
  - transmit a RADIO BEARER RELEASE message on the downlink DCCH using AM or UM RLC;
- for a transport channel reconfiguration procedure:
  - transmit a TRANSPORT CHANNEL RECONFIGURATION message on the downlink DCCH using AM or UM RLC;
- for a physical channel reconfiguration procedure:
  - transmit a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH using AM or UM RLC;
- if the reconfiguration procedure is simultaneous with SRNS relocation procedure, and ciphering and/or integrity protection are activated:
  - transmit new ciphering and/or integrity protection information to be used after reconfiguration.
- if transport channels are added, reconfigured or deleted in uplink and/or downlink, the UTRAN should:
  - set TFCS according to the new transport channel(s).
- if transport channels are added or deleted in uplink and/or downlink, the UTRAN should:
  - send the RB Mapping Info for the new configuration

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

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

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

If the message is used to initiate a transition from CELL_DCH to CELL_FACH state, the UTRAN may assign a common channel configuration of a given cell and C-RNTI to be used in that cell to the UE.

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

If the UE receives:

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

it shall perform actions specified below:

- ~~store the received message in the variable ORDERED_CONFIG;~~
- set the variable ORDERED_RECONFIGURATION to TRUE;

- may first release the current physical channel configuration and
- then establish a new physical channel configuration and act upon all received information elements as specified in subclause 8.6, unless specified in the following:
  - 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 subclause 8.6 and:
    - infer that the PDSCH will be transmitted from the cell from which the downlink DPCH is transmitted.
- The UE shall enter a state according to subclause 8.6.3.3.

If the UE remains in CELL_DCH state after state transition, the UE shall:

- if the IE "UL DPCH Info" is absent, not change its current UL Physical channel configuration;
- if the IE "DL DPCH Info for each RL" is absent, not change its current DL Physical channel configuration.

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

- if the IE "Frequency info" is included in the received reconfiguration message:
  - select a suitable UTRA cell according to [4] on that frequency;
- if the IE "Frequency info" is not included in the received reconfiguration message:
  - select a suitable UTRA cell according to [4];
- if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects another cell than indicated by this IE:
  - initiate a cell update procedure according to subclause 8.3.1 using the cause "Cell reselection";
  - when the cell update procedure completed successfully:
    - if the UE is in CELL_PCH or URA_PCH state:
      - initiate a cell update procedure according to subclause 8.3.1 using the cause "Uplink data transmission";
      - when the cell update procedure completed successfully, proceed as below;
- start timer T305 using its initial value if timer T305 is not running and if periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" in system information block type 1;
- select PRACH according to subclause 8.6.6.2;
- select Secondary CCPCH according to subclause 8.6.6.5.
- use the transport format set given in system information;
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
- ignore that IE and stop using DRX.
- if the contents of the variable C_RNTI is empty:
  - perform a cell update procedure according to subclause 8.3.1 using the cause "Cell reselection"; ~~and then proceed as below.~~
  - when the cell update procedure completed successfully:
    - if the UE is in CELL_PCH or URA_PCH state:
      - initiate a cell update procedure according to subclause 8.3.1 using the cause "Uplink data transmission";

- when the cell update procedure completed successfully, proceed as below:

The UE shall transmit a response message as specified in subclause 8.2.2.4~~a~~, setting the information elements as specified below: [Note to Hans: paragraph type changed to "Normal"]

- if the received reconfiguration message contained the IE "Ciphering mode info"~~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 the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO~~that variable~~.
- if the received reconfiguration message contained the IE "Integrity protection mode info" with the IE "Integrity protection mode command" set to "Modify":
  - include and set the IE "Integrity protection activation info" to the value of the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- if the variable START_VALUE_TO_TRANSMIT is set, the UE shall:
  - include and set the IE "START" to the value of that variable.
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS, and;
- clear that entry.
- if the variable PDCP_SN_INFO is not empty:
  - include the IE "RB with PDCP information list" ~~in any response message transmitted below~~ and set it to the value of the variable PDCP_SN_INFO;
- in TDD, if the procedure is used to perform a handover to a cell where timing advance is enabled, and the UE can calculate the timing advance value in the new cell (i.e. in a synchronous TDD network):
  - set the IE "Uplink Timing Advance" to the calculated value.

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

- if the IE "Frequency info" is included in the received reconfiguration message:
  - select a suitable UTRA cell according to [4] on that frequency;
- if the IE "Frequency info" is not included in the received reconfiguration message:
  - select a suitable UTRA cell according to [4];
- remove any C-RNTI from MAC;
- clear the variable C_RNTI;
- start timer T305 using its initial value if timer T305 is not running and if periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" in system information block type 1;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in subclause 8.6.3.2.
- if the UE enters CELL_PCH state, and the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE:
  - initiate a cell update procedure according to subclause 8.3.1 using the cause "cell reselection";

- when the cell update procedure completed successfully, the procedure ends;

- if the UE enters URA_PCH state, and after cell selection the criteria for URA update caused by “URA reselection” according to subclause 8.3.1 is fulfilled:
    - initiate a URA update procedure according to subclause 8.3.1 using the cause “URA reselection”;
    - when the URA update procedure completed:

The procedure ends.

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

In case the procedure was triggered by reception of a RADIO BEARER SETUP message ~~stored in the variable ORDERED_CONFIG~~, the UE shall:

- If the UE is not in CELL_DCH prior to this procedure and will be in CELL_DCH state at the conclusion of this procedure,
    - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message ~~stored in the variable ORDERED_CONFIG~~, the UE shall:

- If the UE will be in CELL_DCH state at the conclusion of this procedure,
    - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC;

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message ~~stored in the variable ORDERED_CONFIG~~, the UE shall:

- If the UE will be in CELL_DCH state at the conclusion of this procedure,
    - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;

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

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message ~~stored in the variable ORDERED_CONFIG~~, the UE shall:

- If the UE will be in CELL_DCH state at the conclusion of this procedure,
    - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC;

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message ~~stored in the variable ORDERED_CONFIG~~, the UE shall:

- If the UE will be in CELL_DCH state at the conclusion of this procedure,
    - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC;

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

- if the variable PDCP_SN_INFO is empty:
  - if the received reconfiguration message contained the IE "Ciphering mode info" ~~the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set~~:
    - when RLC has confirmed the successful transmission of the response message:
      - perform the actions below.
  - if the received reconfiguration message did not contain the IE "Ciphering mode info" ~~the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is not set~~:
    - when RLC has been requested to transmit the response message:
      - perform the actions below.
- if the variable PDCP_SN_INFO is non-empty:
  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP_SN_INFO:
      - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";
    - perform the actions below.

If the new state is CELL_PCH or URA_PCH, the response message shall be transmitted using the old configuration before the state transition and the UE shall:

- when RLC has confirmed the successful transmission of the response message:
  - for each radio bearer in the variable PDCP_SN_INFO:
    - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
      - configure the RLC entity for that radio bearer to "continue";
  - enter the new state (CELL_PCH or URA_PCH, respectively);
  - perform the actions below.

The UE shall:

- ~~clear the variable ORDERED_CONFIG;~~
- set the variable ORDERED_RECONFIGURATION to FALSE;
- if the received reconfiguration message contained the IE "Ciphering mode info", set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- if the received reconfiguration message contained the IE "Integrity protection mode info", set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- clear the variable PDCP_SN_INFO;
- clear the variable START_VALUE_TO_TRANSMIT;
- ~~clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.~~

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

When UTRAN has received

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

UTRAN may delete the old configuration.

UTRAN may delete the C-RNTI of the UE if the procedure caused the UE to leave the CELL_FACH state.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

If the IE "COUNT-C activation time" is included, UTRAN should only begin incrementing the COUNT-C for radio bearers that are mapped on TM-RLC at the CFN indicated in this IE.

The procedure ends on the UTRAN side.

8.2.2.6 Unsupported configuration in the UE

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

- transmit a failure response as specified in subclause 8.2.2.9, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "failure cause" to "configuration unsupported";
- ~~clear the variable ORDERED_CONFIG;~~
- ~~clear the variable PDCP_SN_INFO;~~
- ~~clear the variable INVALID_CONFIGURATION;~~
- ~~clear~~ set the variable UNSUPPORTED_CONFIGURATION to FALSE;
- ~~clear the variable START_VALUE_TO_TRANSMIT;~~
- ~~clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;~~
- continue with any ongoing processes and procedures~~resume normal operation~~ as if the reconfiguration message was not received;

The procedure ends.

8.2.2.7 Physical channel failure

A physical channel failure occurs in case the criteria defined in subclause 8.5.4 are not fulfilled.

If the received message caused the UE to be in CELL_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message ~~or if used, the activation time has expired~~ ~~stored in the variable ORDERED_CONFIG~~ the UE shall:

- revert to the configuration prior to the reception of the message (old configuration);
- if the old configuration includes dedicated physical channels (CELL_DCH state) and the UE is unable to revert to the old configuration ~~or if used, the activation time has expired~~:
  - initiate a cell update procedure according to subclause 8.3.1, using the cause "radio link failure";
  - after the cell update procedure has completed successfully:
    - proceed as below;
- if the old configuration does not include dedicated physical channels (CELL_FACH state):
  - select a suitable UTRA cell according to [4];
  - if the UE selects another cell than the cell the UE camped on upon reception of the reconfiguration message:
    - initiate a cell update procedure according to subclause 8.3.1, using the cause "Cell reselection";
    - after the cell update procedure has completed successfully:
      - proceed as below;
- transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "failure cause" to "physical channel failure";
- ~~clear the variable ORDERED_CONFIG;~~
- set the variable ORDERED_RECONFIGURATION to FALSE;
- ~~clear the variable PDCP_SN_INFO;~~
- ~~clear the variable START_VALUE_TO_TRANSMIT;~~
- ~~clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;~~
- continue with any ongoing processes and procedures~~resume normal operation~~ as if the reconfiguration message was not received;

The procedure ends.

8.2.2.8 Cell re-selection

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

- initiate a cell update procedure, as specified in subclause 8.3.1;
- ~~after the cell update procedure has completed successfully:~~
- continue with the reconfiguration procedure ~~normally~~.
  - ~~proceed as below;~~
- ~~if the cell re-selection occurred before the response message was submitted to lower layers for transmission; and the state after the state transition is CELL_FACH; and~~
  - ~~if the IE "New C-RNTI" or the IE "DL information for each radio link" is included in the variable ORDERED_CONFIG:~~

- ~~transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:~~
  - ~~include the IE "RRC transaction identifier"; and~~
  - ~~set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and~~
  - ~~clear that entry;~~
  - ~~set the value of the IE "failure cause" to "cell reselection";~~
- ~~for each radio bearer in the variable PDCP_SN_INFO:~~
  - ~~if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":~~
    - ~~configure the RLC entity for that radio bearer to continue;~~
- ~~clear the variable ORDERED_CONFIG;~~
- ~~clear the variable PDCP_SN_INFO;~~
- ~~clear the variable INVALID_CONFIGURATION;~~
- ~~clear the variable UNSUPPORTED_CONFIGURATION;~~
- ~~clear the variable START_VALUE_TO_TRANSMIT;~~
- ~~clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;~~
- ~~the procedure ends.~~

- ~~else if the variable ORDERED_CONFIG contains neither the IE "New C-RNTI" nor the IE " DL information for each radio link":~~
  - ~~continue with the reconfiguration procedure normally.~~

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

The UE shall:

- in case of reception of a RADIO BEARER SETUP message ~~stored in the variable ORDERED_CONFIG~~:
  - if the radio bearer establishment procedure affects several radio bearers:
    - (may) include the identities of the radio bearers for which the procedure would have been successful into the RADIO BEARER SETUP FAILURE message;
  - transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC;
- in case of reception of a RADIO BEARER RECONFIGURATION message ~~stored in the variable ORDERED_CONFIG~~:
  - if the radio bearer reconfiguration procedure affects several radio bearers:
    - (may) include the identities of the radio bearers for which the procedure would have been successful into the RADIO BEARER RECONFIGURATION FAILURE message;
  - transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC;
- in case of reception of a RADIO BEARER RELEASE message ~~stored in the variable ORDERED_CONFIG~~:
  - if the radio bearer release procedure affects several radio bearers:
    - (may) include the identities of the radio bearers for which the procedure would have been successful into the RADIO BEARER RELEASE FAILURE message;

- transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC;

in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message ~~stored in the variable ORDERED_CONFIG~~:

- transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC;

in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message ~~stored in the variable ORDERED_CONFIG~~:

- transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC;

- when the response message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if no reconfiguration attempt had occurred.

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

When the UTRAN has received

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

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

The procedure ends on the UTRAN side.

8.2.2.11 Invalid configuration

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

- keep the configuration existing before the reception of the message;
- transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - clear that entry;
  - set the IE "failure cause" to "invalid configuration";
- ~~clear the variable ORDERED_CONFIG;~~
- ~~clear the variable PDCP_SN_INFO;~~
- ~~clear~~ set the variable INVALID_CONFIGURATION to FALSE;
- ~~clear the variable UNSUPPORTED_CONFIGURATION;~~
- ~~clear the variable START_VALUE_TO_TRANSMIT;~~
- ~~clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;~~

- continue with any ongoing processes and procedures~~resume normal operation~~ as if the reconfiguration message was not received;

The procedure ends.

8.2.2.12 Incompatible simultaneous reconfiguration

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

- not apply the configuration contained in the received reconfiguration message;
- transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "failure cause" to "incompatible simultaneous reconfiguration".
- continue with any ongoing processes and procedures~~resume normal operation~~ as if the reconfiguration message was not received;

The procedure ends.

8.2.2.12a Incompatible simultaneous security reconfiguration

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

- transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "failure cause" to the cause value "incompatible simultaneous reconfiguration";
- set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
- continue with any ongoing processes and procedures~~resume normal operation~~ as if the reconfiguration message was not received;

The procedure ends.

8.2.2.12b Cell update procedure during security reconfiguration

If, caused by the received reconfiguration message,

- the IE “Reconfiguration” in the variable CIPHERING_STATUS is set to TRUE, and/or
- the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO is set to TRUE

and

- a cell update procedure is initiated according to subclause 8.3.1;

the UE shall:

- abort the ongoing integrity and/or ciphering reconfiguration;
- resume data transmission on any suspended radio bearer and signalling radio bearer mapped on RLC-AM or RLC-UM;
- transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "failure cause" to the cause value "cell update occurred";
  - if the received reconfiguration message contained the IE “Ciphering mode info”, set the IE “Reconfiguration” in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - if the received reconfiguration message contained the IE “Integrity protection mode info”, set the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- continue with any ongoing processes and procedures~~resume normal operation~~ as if the reconfiguration message was not received;

The procedure ends.

8.2.2.13 Invalid received message

If ~~the variable ORDERED_CONFIG is not set and~~ the received reconfiguration message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "failure cause" to the cause value "protocol error";
  - include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

The procedure ends.

8.2.3 Radio bearer release

See subclause 8.2.2 (Reconfiguration procedures).

8.2.4 Transport channel reconfiguration

See subclause 8.2.2 (Reconfiguration procedures).

8.2.5 Transport format combination control

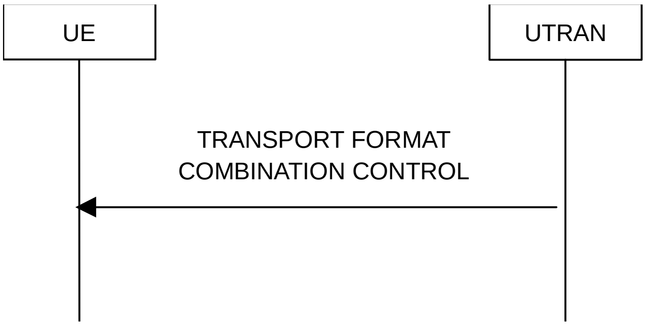


Figure 32: Transport format combination control, normal flow

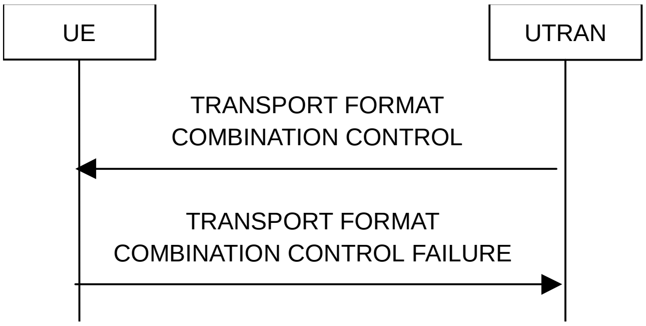


Figure 33: Transport format combination control, failure case

8.2.5.1 General

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

8.2.5.2 Initiation

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

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

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

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

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

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

Upon reception of the TRANSPORT FORMAT COMBINATION CONTROL message the UE shall:

- act upon all received information elements as specified in 8.6, unless specified otherwise in the following;
- perform the actions for the transport format combination subset specified in the IE "DPCH/PUSCH TFCS in uplink" according to subclause 8.6.5.3;
- if the variable INVALID_CONFIGURATION is set to FALSE:

- if the IE "TFC Control duration" is included in the message:
  - store the value of the IE "TFC Control duration" in the IE "Duration" in the variable TFC_SUBSET
  - apply the transport format combination subset in the IE "Current TFC subset" stored in the variable TFC_SUBSET for the number of (10 ms) frames specified in the IE "TFC Control duration";
  - at the end of the time period defined by the IE "TFC control duration":
    - if the IE "Duration" in the variable TFC_SUBSET is set:
      - go back to any previous restriction of the transport format combination set defined by the content of the IE "Default TFC subset" in the variable TFC_SUBSET;
      - set the value of the IE "Current TFC subset" in the variable TFC_SUBSET to the value of the IE "Default TFC subset" in the variable TFC_SUBSET;
      - clear the IE "Duration" in the variable TFC_SUBSET;

The UE shall clear the entry for the TRANSPORT FORMAT COMBINATION CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS and the procedure ends.

8.2.5.4 Invalid configuration

If the variable INVALID_CONFIGURATION is set to TRUE due to the received TRANSPORT FORMAT COMBINATION CONTROL message the UE shall:

- if the TRANSPORT FORMAT COMBINATION CONTROL message was received on AM RLC:
  - keep the TFC subset existing before the TRANSPORT FORMAT COMBINATION CONTROL message was received;
  - transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC;
  - set the IE "RRC transaction identifier" in the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the TRANSPORT FORMAT COMBINATION CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "failure cause" to "invalid configuration";
  - when the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been submitted to lower layers for transmission the procedure ends.
- if the TRANSPORT FORMAT COMBINATION CONTROL message was received on UM RLC or TM RLC:
  - ignore the TRANSPORT FORMAT COMBINATION CONTROL message.

8.2.5.5 Invalid TRANSPORT FORMAT COMBINATION CONTROL message

If the TRANSPORT FORMAT COMBINATION CONTROL message was received on AM RLC or UM RLC and contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the uplink DCCH using AM RLC setting the information elements as specified below;
  - set the IE "RRC transaction identifier" in the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the TRANSPORT FORMAT COMBINATION CONTROL message in the table "Rejected transactions" in the variable TRANSACTIONS; and

  - clear that entry;
  - set the IE "failure cause" to the cause value "protocol error";
  - include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been submitted to lower layers for transmission:
  - ~~resume data transmission on RB 3 and upwards if RLC-AM or RLC-UM is used on those radio bearers;~~
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid TRANSPORT FORMAT COMBINATION CONTROL message has not been received and the procedure ends.

If the TRANSPORT FORMAT COMBINATION CONTROL message was received on TM RLC and contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

  - ignore the invalid TRANSPORT FORMAT COMBINATION CONTROL message has not been received;
  - the procedure ends.

8.2.6 Physical channel reconfiguration

See subclause 8.2.2 Reconfiguration procedures.

8.2.7 Physical Shared Channel Allocation [TDD only]

Figure 34: Physical Shared Channel Allocation

8.2.7.1 General

The purpose of this procedure is to allocate radio resources to USCH and/or DSCH transport channels in TDD mode, for ~~usage~~ use by a UE. This procedure can also be used to indicate to the UE, that a PUSCH allocation is pending, in order to prevent further capacity requests from the UE.

8.2.7.2 Initiation

To initiate the Physical Shared Channel Allocation procedure, the UTRAN sends the "PHYSICAL SHARED CHANNEL ALLOCATION" message on the downlink SHCCH or on the downlink DCCH using UM RLC. The C-RNTI shall be included for UE identification, if the message is sent on the SHCCH.

8.2.7.3 Reception of a PHYSICAL SHARED CHANNEL ALLOCATION message by the UE

Upon reception of a "PHYSICAL SHARED CHANNEL ALLOCATION" message, if the message is received on the downlink SHCCH the UE shall:

- check the C-RNTI to see if the UE is addressed by the message. If the UE is addressed by the message, or if the message is received on the downlink DCCH, the UE shall perform the following actions, otherwise the UE shall ignore the message:

- act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following:
- if the IE "ISCP Timeslot list" is included:

  store the timeslot numbers given there for future Timeslot ISCP measurements and reports;
- if the IE "PDSCH capacity allocation info" is included:
  - configure the physical resources used for the downlink CCTrCH given by the IE "TFCS ID" according to the following:
    - if the CHOICE "Configuration" has the value "Old configuration":
      - if the UE has stored a PDSCH configuration with the identity given by the IE "PDSCH Identity":
        - configure the physical resources according to that configuration;
      - otherwise:
        - ignore the IE "PDSCH capacity allocation info";
    - if the CHOICE "Configuration" has the value "New configuration":
      - configure the physical resources according to the information given in IE "PDSCH Info". If IE "Common timeslot info" or IE "PDSCH timeslots and codes" IE are not present in IE "PDSCH Info":
        - reuse the configuration specified in the previous "PHYSICAL SHARED CHANNEL ALLOCATION" message for this CCTrCH;
      - if the IE "PDSCH Identity" is included:
        - store the new configuration using that identity;
  - start using the new configuration at the CFN specified by the IE "Allocation activation time", and use that for the duration given by the IE "Allocation duration";
  - if the IE "Confirm request" has the value "Confirm PDSCH" and IE "PDSCH Identity" is included in IE "PDSCH capacity allocation info":
    - initiate the PUSCH CAPACITY REQUEST procedure as described in subclause 8.2.8.
- if the IE "PUSCH capacity allocation info" is included:
  - stop the timer T310, if running;
  - if the CHOICE "PUSCH allocation" has the value "PUSCH allocation pending":
    - start the timer T311;
  - if the CHOICE "PUSCH allocation" has the value "PUSCH allocation assignment":
    - stop the timer T311, if running;
    - configure the physical resources used for the uplink CCTrCH given by the IE "TFCS ID" according to the following:
      - if the CHOICE "Configuration" has the value "Old configuration":
        - if the UE has stored a PUSCH configuration with the identity given by the IE "PUSCH Identity":
          - configure the physical resources according to that configuration;
        - otherwise:
          - ignore the IE "PUSCH capacity allocation info" ;
      - if the CHOICE "Configuration" has the value "New configuration", the UE shall:

- configure the physical resources according to the information given in IE "PUSCH Info". If IE "Common timeslot info" or IE "PUSCH timeslots and codes" is not present in IE "PUSCH Info":
  - reuse the configuration specified in the previous "PHYSICAL SHARED CHANNEL ALLOCATION" message for this CCTrCH.
- if the IE "PUSCH Identity" is included:
  - store the new configuration using that identity;
- start using the new configuration at the CFN specified by the IE "Allocation activation time", and use that for the duration given by the IE "Allocation duration";
- if the IE "Confirm request" has the value "Confirm PUSCH" and IE "PUSCH Identity" is included in IE "PUSCH capacity allocation info":
  - initiate the PUSCH CAPACITY REQUEST procedure as described in subclause 8.2.8.

- determine the TFCS subset and hence the TFCI values which are possible given the PUSCH allocation for that CCTrCH;
- configure the MAC-c/sh in the UE with this TFCS restriction if necessary;
- transmit USCH Transport Block Sets as required, within the TFCS limits given by the PUSCH allocation.

NOTE: If the UE has just entered a new cell and System Information Block Type 6has not yet been scheduled, PUSCH/PDSCH information should be specified in the allocation message.

The UE shall clear the entry for the PHYSICAL SHARED CHANNEL ALLOCATION message in the table "Accepted transactions" in the variable TRANSACTIONS and the procedure ends.

8.2.7.4 Invalid PHYSICAL SHARED CHANNEL ALLOCATION message

If the UE receives a PHYSICAL SHARED CHANNEL ALLOCATION message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- ignore the invalid PHYSICAL SHARED CHANNEL ALLOCATION message;
- submit the PUSCH CAPACITY REQUEST message for transmission on the uplink SHCCH, setting the information elements in the message as specified in subclause 8.2.8.2a;
- reset counter V310;
- start timer T310;
- proceed as described in subclause 8.2.8.

8.2.8 PUSCH capacity request [TDD only]

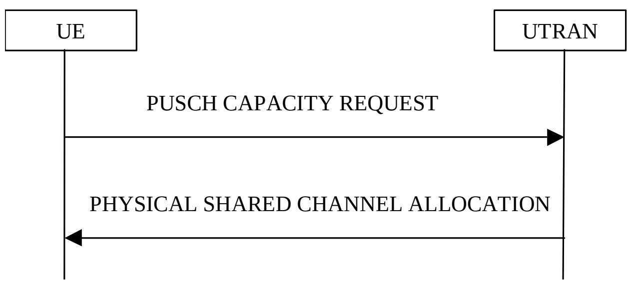


Figure 35: PUSCH Capacity request procedure

8.2.8.1 General

With this procedure, the UE transmits its request for PUSCH resources to the UTRAN. In the normal case, the UTRAN responds with a PHYSICAL SHARED CHANNEL ALLOCATION message, which either allocates the requested PUSCH resources, and/or allocates a PDSCH resource, or may just serve as an acknowledgement, indicating that PUSCH allocation is pending.

This procedure can also be used to acknowledge the reception of a PHYSICAL SHARED CHANNEL ALLOCATION message, or to indicate a protocol error in that message.

With the PUSCH CAPACITY REQUEST message, the UE can request capacity for one or more USCH.

8.2.8.2 Initiation

This procedure is initiated

- in the CELL_FACH or CELL_DCH state,
- and when at least one RB using USCH has been established,
- and when the UE sees the requirement to request physical resources (PUSCH) for an USCH channel or there is the need to reply to a PHYSICAL SHARED CHANNEL ALLOCATION message as described in clause 8.2.7 (i.e. to confirm the reception of a message, if requested to do so, or to indicate a protocol error).

The procedure can be initiated if:

- Timer T311 is not running.
- The timer T310 (capacity request repetition timer) is not running.

The UE shall:

- set the IEs in the PUSCH CAPACITY REQUEST message according to subclause 8.2.8.3;
- submit the PUSCH CAPACITY REQUEST message for transmission on the uplink SHCCH;
- reset counter V310;
- start timer T310.

8.2.8.3 PUSCH CAPACITY REQUEST message contents to set

With one PUSCH CAPACITY REQUEST message, capacity for one or more USCH can be requested. It shall include these information elements:

- C-RNTI to be used as UE identity if the message is sent on RACH;
- Traffic volume measured results for each radio bearer satisfying the reporting criteria as specified in the MEASUREMENT CONTROL procedure (if no radio bearer satisfies the reporting criteria, traffic volume measured results shall not be included). These results shall include:
  - Radio Bearer ID of the Radio Bearer being reported;
  - RLC buffer payload for these radio bearers, as specified by the MEASUREMENT CONTROL procedure;
- If the initiation of the procedure is triggered by the IE "Confirm request" set to "Confirm PDSCH" in a previously received PHYSICAL SHARED CHANNEL ALLOCATION message, the UE shall:
  - set the CHOICE "Allocation confirmation" to "PDSCH Confirmation" with the value given in the IE "PDSCH Identity" in the received message.
- If the initiation of the procedure is triggered by the IE "Confirm request" set to "Confirm PUSCH" in a previously received PHYSICAL SHARED CHANNEL ALLOCATION message, the UE shall:
  - set the CHOICE "Allocation confirmation" to "PUSCH Confirmation" with the value given in the IE "PUSCH Identity" in the received message.

- If the variable PROTOCOL_ERROR_REJECT is set to TRUE, the UE shall:
  - include the IE "RRC transaction identifier" in the response message transmitted below; and
  - set it to the value of "RRC transaction identifier" in the entry for the PHYSICAL SHARED CHANNEL ALLOCATION message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - clear that entry.
  - set the IE "protocol error indicator" to TRUE;
  - include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- if the value of the variable PROTOCOL_ERROR_ REJECT is FALSE;
  - set the IE "Protocol error indicator" to FALSE;

As an option, the message may include IE "Timeslot ISCP" and IE "Primary CCPCH RSCP".

The timeslots for which "Timeslot ISCP" may be reported shall have been configured with a previous PHYSICAL SHARED CHANNEL ALLOCATION message.

8.2.8.4 Reception of a PUSCH CAPACITY REQUEST message by the UTRAN

Upon receiving a PUSCH CAPACITY REQUEST message with traffic volume measurement included for at least one radio bearer, the UTRAN should initiate the PHYSICAL SHARED CHANNEL ALLOCATION procedure, either for allocating PUSCH or PDSCH resources as required, or just as an acknowledgement, indicating a pending PUSCH allocation, as described in subclause 8.2.7.

8.2.8.5 T310 expiry

Upon expiry of timer T310, the UE shall

- if V310 is smaller than N310:
  - transmit a new PUSCH CAPACITY REQUEST message on the Uplink SHCCH;
  - restart timer T310;
  - increment counter V310;
  - set the IEs in the PUSCH CAPACITY REQUEST message as specified in subclause 8.2.8.3;
- if V310 is greater than or equal to N310:
  - the procedure ends.

8.2.9 Void

8.2.10 Uplink Physical Channel Control [TDD only]

Figure 36: Uplink Physical Channel Control

8.2.10.1 General

The uplink physical channel control procedure is used in TDD to control the uplink outer loop power control and timing advance running in the UE.

8.2.10.2 Initiation

The UTRAN initiates the procedure by transmitting the UPLINK PHYSICAL CHANNEL CONTROL message on the downlink DCCH using AM or UM RLC in order to update parameters for uplink open loop power control in the UE for one CCTrCH or to inform the UE about a new timing advance value to be applied. Especially, uplink interference information measured by the UTRAN can be included for the uplink timeslots used for the CCTrCH.

8.2.10.3 Reception of UPLINK PHYSICAL CHANNEL CONTROL message by the UE

Upon reception of the UPLINK PHYSICAL CHANNEL CONTROL message, the UE shall act upon all received information elements as specified in subclause 8.6.

If the IEs "Uplink DPCH Power Control Info", "Constant Value", "Alpha" or IE group "list of UL Timeslot Interference" are transmitted, this information shall be taken into account by the UE for uplink open loop power control as specified in subclause 8.5.7.

The UE shall clear the entry for the UPLINK PHYSICAL CHANNEL CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS and the procedure ends.

8.2.10.4 Invalid UPLINK PHYSICAL CHANNEL CONTROL message

If the UE receives a UPLINK PHYSICAL CHANNEL CONTROL message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC, setting the information elements as specified below:
  - include the IE "Identification of received message"; and
  - set the IE "Received message type" to UPLINK PHYSICAL CHANNEL CONTROL; and
  - set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UPLINK PHYSICAL CHANNEL CONTROL message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - clear that entry;

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

- when the RRC STATUS message has been submitted to lower layers for transmission:

  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid UPLINK PHYSICAL CHANNEL CONTROL message has not been received.

8.2.11 Physical channel reconfiguration failure

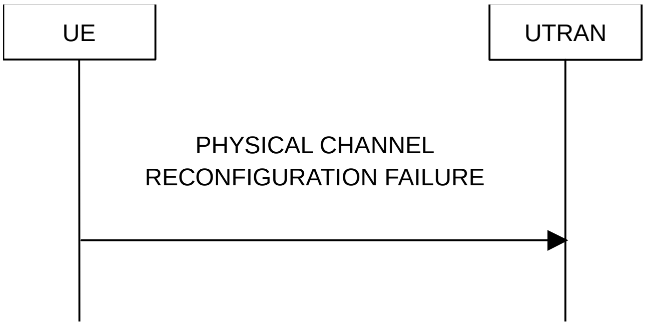


Figure 37: Physical channel reconfiguration failure in case of runtime configuration error

8.2.11.1 General

The physical channel reconfiguration failure procedure is used to indicate to the network a runtime configuration error in the UE.

8.2.11.2 Runtime error due to overlapping compressed mode configuration

When the UE has received from the UTRAN the configurations of several compressed mode transmission gap pattern sequences, and if several of these patterns are to be simultaneously active, the UE shall check to see if these simultaneously active transmission gap pattern sequences create transmission gaps in the same frame. The UE shall:

- if the parallel transmission gap pattern sequences create no illegal overlap:
  - set the variable COMPRESSED_MODE_ERROR to FALSE;
- otherwise:
  - set the variable COMPRESSED_MODE_ERROR to TRUE;
  - delete the overlapping transmission gap pattern sequence configuration stored in the variable TGPS_IDENTITY, which is associated with the highest value of IE "TGPSI";
  - transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the information elements as specified below:
    - not include the IE "RRC transaction identifier";
    - set the cause value in IE "failure cause" to value "compressed mode runtime error";
  - terminate the inter-frequency and/or inter-RAT measurements corresponding to the deleted transmission gap pattern sequence;
  - when the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been submitted to lower layers for transmission the procedure ends.

8.3 RRC connection mobility procedures

8.3.1 Cell and URA update procedures

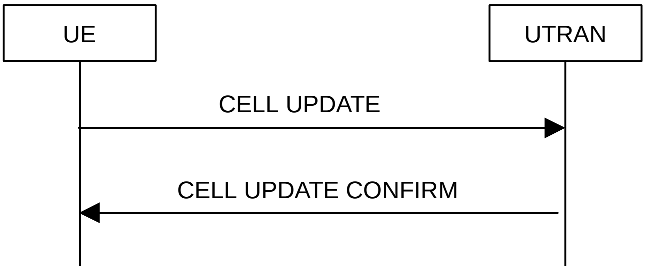


Figure 38: Cell update procedure, basic flow

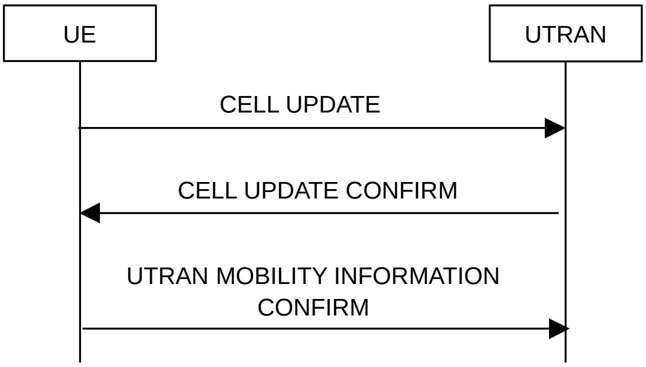


Figure 39: Cell update procedure with update of UTRAN mobility information

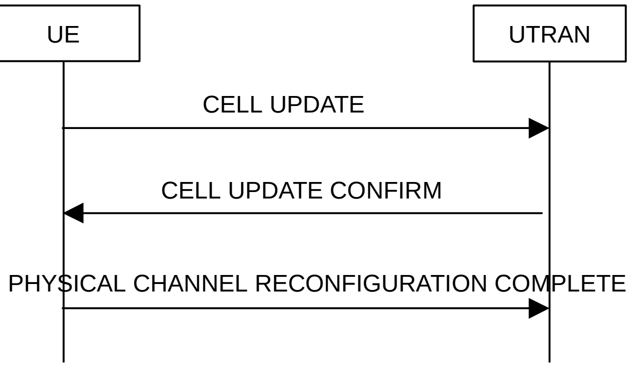


Figure 40: Cell update procedure with physical channel reconfiguration

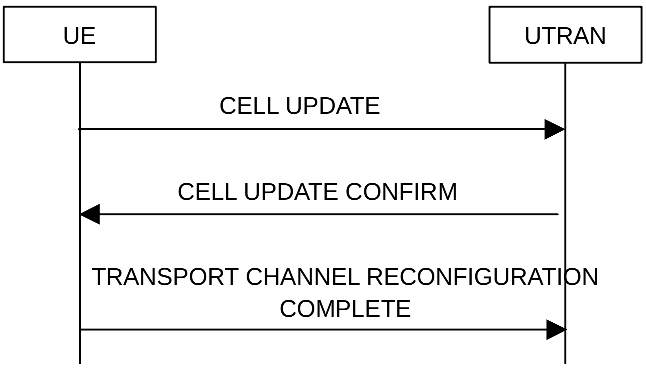


Figure 41: Cell update procedure with transport channel reconfiguration

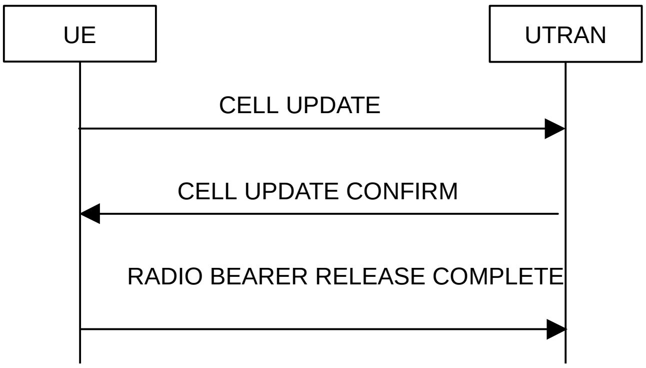


Figure 42: Cell update procedure with radio bearer release

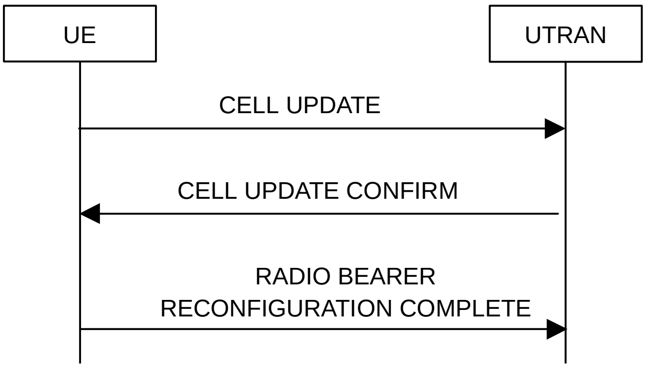


Figure 43: Cell update procedure with radio bearer reconfiguration

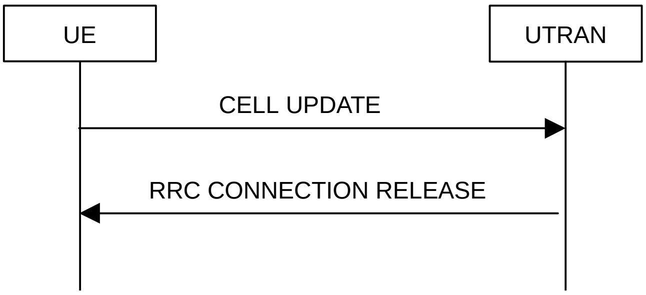


Figure 44: Cell update procedure, failure case

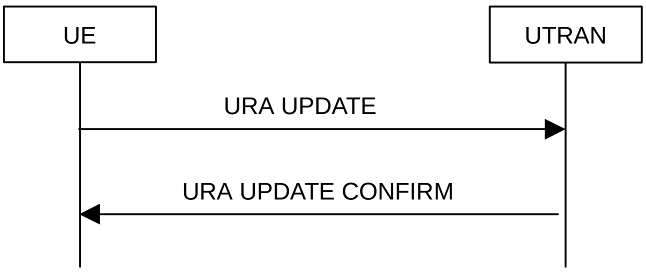


Figure 45: URA update procedure, basic flow

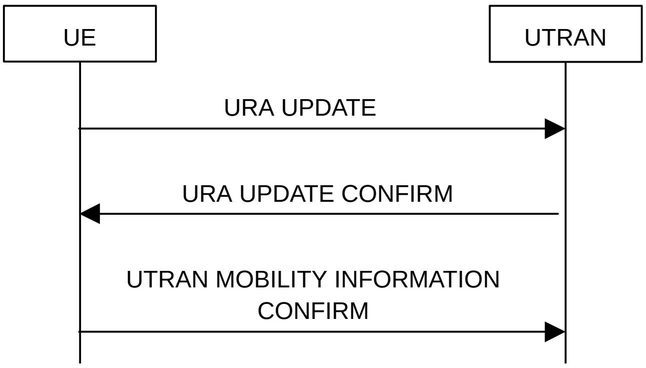


Figure 46: URA update procedure with update of UTRAN mobility information

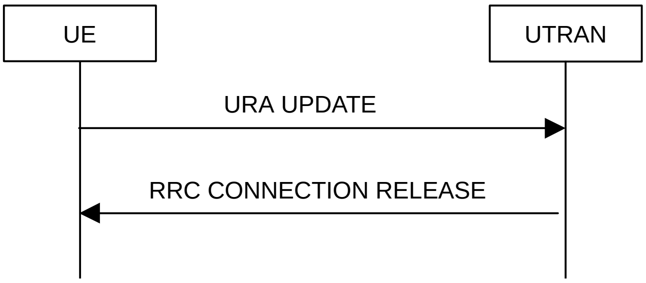


Figure 47: URA update procedure, failure case

8.3.1.1 General

The URA update and cell update procedures serve several main purposes:

- to notify UTRAN after re-entering service area in the URA_PCH or CELL_PCH state;
- to notify UTRAN of an RLC unrecoverable error on an AM RLC entity;
- to be used as a supervision mechanism in the CELL_FACH~~, or~~ CELL_PCH, or URA_PCH state by means of periodical ~~cell~~ update;

In addition, the URA update procedure also serves the following purpose:

- to retrieve a new URA identity after cell re-selection to a cell not belonging to the current URA assigned to the UE in URA_PCH state;

In addition, the cell update procedure also serves the following purposes:

- to update UTRAN with the current cell the UE is camping on after cell reselection;
- to act on a radio link failure in the CELL_DCH state;
- when triggered in the URA_PCH or CELL_PCH state, to notify UTRAN of a transition to the CELL_FACH state due to the reception of UTRAN originated paging or due to a request to transmit uplink data.

The URA update and cell update procedures may:

- include an update of mobility related information in the UE;
- cause a state transition from the CELL_FACH state to the CELL_DCH, CELL_PCH or URA_PCH states or idle mode.

The cell update procedure may also include:

- a reset of AM RLC entities;

- a radio bearer release, radio bearer reconfiguration, transport channel reconfiguration or physical channel reconfiguration;

8.3.1.2 Initiation

A UE shall initiate the cell update procedure in the following cases:

- Uplink data transmission:
  - if the UE is in URA_PCH or CELL_PCH state; and
  - if the UE has uplink data or a signalling message on RB 1 or upwards to transmit:
    - perform cell update using the cause "uplink data transmission".
- Paging response:
  - if the criteria for performing cell update with the cause specified above in the current subclause is not met; and
  - if the UE in URA_PCH or CELL_PCH state, receives a PAGING TYPE 1 message fulfilling the conditions for initiating a cell update procedure specified in subclause 8.1.2.3:
    - perform cell update using the cause "paging response".
- Re-entering service area:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE has been out of service area and re-enters service area before T307 or T317 expires:
    - perform cell update using the cause "re-entering service area".
- Radio link failure:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_DCH state; and
  - if the criteria for radio link failure is met as specified in subclause 8.5.6:
    - perform cell update using the cause "radio link failure".
- RLC unrecoverable error:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE detects RLC unrecoverable error in an AM RLC entity:
    - perform cell update using the cause "RLC unrecoverable error".
- Cell reselection:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE performs cell re-selection or the variable C_RNTI is empty:
    - perform cell update using the cause "cell reselection".

- Periodical cell update:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the timer T305 expires; and
  - if the criteria for "in service area" as specified in subclause 8.5.5.2 is fulfilled; and
  - if periodic ~~cell~~ updating has been configured by T305 in the IE “UE Timers and constants in connected mode” set to any other value than “infinity” ~~requested in system information block type 1~~:
    - perform cell update using the cause "periodical cell update".

A UE in URA_PCH state shall initiate the URA update procedure in the following cases:

- URA reselection:
  - ~~if the criteria for performing URA update with the cause as specified above is not met; and~~
  - if the UE detects that the current URA assigned to the UE, stored in the variable URA_IDENTITY, is not present in the list of URA identities in system information block type 2, the list of URA identities in system information block type 2 is empty or if the system information block type 2 can not be found:
    - perform URA update using the cause "URA reselection".
- Periodic URA update:
  - if ~~none of~~ the criteria for performing ~~cell~~ URA update with the causes as specified above in the current subclause is not met; and
  - if the timer T305 expires while the UE is in the service area; and
    - periodic ~~URA~~ updating has been configured by T305 in the IE “UE Timers and constants in connected mode” set to any other value than “infinity”~~requested in system information block type 1~~:
      - perform URA update using the cause "periodic URA update".

When initiating the URA update or cell update procedure, the UE shall:

- stop timer T305;
- if the UE is in CELL_DCH state:
- in the variable RB_TIMER_INDICATOR, set the IE "T314 expired" and the IE "T315 expired" to FALSE;
  - if the stored values of the timer T314 and timer T315 are both equal to zero:
    - release all its radio resources;
    - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
    - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
    - clear the variable ESTABLISHED_RABS;
    - enter idle mode;
    - ~~indicate to the non-access stratum local end release of the signalling connections and all established radio access bearers in the variable ESTABLISHED_RABS;~~
    - perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
    - And the procedure ends.

   - if the stored value of the timer T314 is equal to zero:
      - release all radio bearers, associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";
      - in the variable RB_TIMER_INDICATOR set the IE "T314 expired" to TRUE;
   - if the stored value of the timer T315 is equal to zero:
      - release all radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";
      - in the variable RB_TIMER_INDICATOR set the IE "T315 expired" to TRUE;
   - if the stored value of the timer T314 is greater than zero:
      - re-start timer T314;
   - if the stored value of the timer T315 is greater than zero:
      - re-start timer T315;
   - for the released radio bearer(s):
      - delete the information about the radio bearer from the variable ESTABLISHED_RABS;
      - when all radio bearers belonging to the same radio access bearer have been released:
         - indicate local end release of the radio access bearer to ~~the~~ upper layers ~~entity~~ using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;
         - delete all information about the radio access bearer from the variable ESTABLISHED_RABS;
- set the variables PROTOCOL_ERROR_INDICATOR, FAILURE_INDICATOR, UNSUPPORTED_CONFIGURATION and INVALID_CONFIGURATION to FALSE;
- set the variable CELL_UPDATE_STARTED to TRUE;
- move to CELL_FACH state, if not already in that state;
- if the UE performs cell re-selection:
   - clear the variable C_RNTI; and
   - stop using that C_RNTI just cleared from the variable C_RNTI in MAC;
- set CFN in relation to SFN of current cell according to subclause 8.5.15;
- ~~set the contents of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;~~
- ~~submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;~~
- in case of a cell update procedure:
   - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
   - submit the CELL UPDATE message for transmission on the uplink CCCH;
- in case of a URA update procedure:
   - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
   - submit the URA UPDATE message for transmission on the uplink CCCH;
- reset counter V302;
- start timer T302 when the MAC layer indicates success or failure in transmitting the message.

8.3.1.3 CELL UPDATE / URA UPDATE message contents to set

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

In case of URA update procedure the UE shall transmit a URA UPDATE message.

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

- set the IE "Cell update cause" corresponding to the cause specified in subclause 8.3.1.2 that is valid when the CELL UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a cell update procedure is initiated by the UE until when the procedure ends, ~~different causes may be used in different individually transmitted~~ additional CELL UPDATE messages may be transmitted by the UE with different causes.

- set the IE "U-RNTI" to the value of the variable U_RNTI;
- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE:
  - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - include and set the IE "failure cause" to the cause value "protocol error";
  - set the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- if the value of the variable FAILURE_INDICATOR is TRUE:
  - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;
  - include and set the IE "failure cause" to the value of the variable FAILURE_CAUSE;
- include the START values for each CN domain, calculated according to subclause 8.5.9;
- if an unrecoverable error in any of the AM RLC entities for the RB 2 or 3 is detected:
  - set the IE "AM_RLC error indication (for c-plane)" to TRUE;
- otherwise:
  - set the IE "AM_RLC error indication (for c-plane)" to FALSE;
- if an unrecoverable error in any of the AM RLC entities for the RB 5 or upwards is detected:
  - set the IE "AM_RLC error indication (for u-plane)" to TRUE;
- otherwise:
  - set the IE "AM_RLC error indication (for u-plane)" to FALSE;
- set the IE "RB Timer indicator" to the value of the variable RB_TIMER_INDICATOR;
- include an intra-frequency measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in system information block type 12 (or System Information Block type 11, if System Information Block type 12 is not being broadcast).

The UE shall set the IEs in the URA UPDATE message as follows:

- set the IE "U-RNTI" to the value of the variable U_RNTI;

- set the IE "URA update cause" corresponding to which cause as specified in subclause 8.3.1.2 that is valid when the URA UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a URA update procedure is initiated by the UE until when the procedure ends, ~~different causes may be used in different individually transmitted~~additional URA UPDATE messages may be transmitted by the UE with different causes, depending on which causes are valid for the respective URA UPDATE message.

- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE:
  - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - set the IE "Protocol error indicator" to TRUE;
  - 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:
  - if the value of the variable INVALID_CONFIGURATION is TRUE:
    - include the IE "RRC transaction identifier"; and
      - set it to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;
    - set the IE "Protocol error indicator" to TRUE;
    - include the IE "Protocol error information" set to “Information element value not comprehended”;
  - if the value of the variable INVALID_CONFIGURATION is FALSE:
    - set the IE "Protocol error indicator" to FALSE. [Note to Hans: indentation changed to B4]

8.3.1.4 T305 expiry and the UE detects "out of service area"

When the T305 expires and the UE detects that it is "out of service area" as specified in subclause 8.5.5.1, the UE shall

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

8.3.1.4.1 Re-entering "in service area"

If the UE detects "in service area" according to subclause 8.5.5.2 and timer T307 or T317 is running, the UE shall:

- check the value of V302; and
- if V302 is equal to or smaller than N302:
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - ~~set the contents of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;~~

- ~~submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;~~
- increment counter V302;
- restart timer T302 when the MAC layer indicates success or failure to transmit the message.

- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - ~~clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;~~
  - in case of a cell update procedure, clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure, clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - ~~a connection failure may be indicated to the non-access stratum;~~
  - perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
  - and the procedure ends.

8.3.1.4.2 Expiry of timer T307

When the T307 expires, the UE shall:

- move to idle mode;
- release all dedicated resources;
- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;

~~indicate an RRC connection failure to the non-access stratum.~~

- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2. [Note to Hans: Indentation changed to B1]
- and the procedure ends. . [Note to Hans: Indentation changed to B1]

8.3.1.5 Reception of an CELL UPDATE/URA UPDATE message by the UTRAN

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

- in case the procedure was triggered by reception of a CELL UPDATE, transmit a CELL UPDATE CONFIRM message on the downlink DCCH or optionally on the CCCH but only if ciphering is not required; or
- in case the procedure was triggered by reception of a URA UPDATE, transmit a URA UPDATE CONFIRM message to the lower layers for transmission on the downlink CCCH or DCCH in which case the UTRAN should include the IE "URA identity" in the URA UPDATE CONFIRM message in a cell where multiple URA identifiers are broadcast; or
- initiate an RRC connection release procedure (see subclause 8.1.4) by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH.

8.3.1.6 Reception of the CELL UPDATE CONFIRM/URA UPDATE CONFIRM message by the UE

When the UE receives a CELL UPDATE CONFIRM/URA UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U_RNTI, or;
- if the message is received on DCCH;

the UE shall:

- stop timer T302;
- set the variable CELL_UPDATE_STARTED to FALSE;
- in case of a cell update procedure and the CELL UPDATE CONFIRM message:
  - includes "RB information elements"; and/or
  - includes "Transport channel information elements"; and/or
  - includes "Physical channel information elements";
  - and the variable ORDERED_RECONFIGURATION is set to FALSE:
    - set the variable ORDERED_RECONFIGURATION to TRUE;
- act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following:
  - use the transport channel(s) applicable for the physical channel types that is used; and
  - if the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s):
    - use the TFS given in system information.
  - if none of the TFS stored is compatible with the physical channel:
    - delete the stored TFS;
    - use the TFS given in system information.
  - if the CELL UPDATE CONFIRM message includes the IE "RLC reset indicator (for C-plane)":
    - reset the RLC entities for RB 2, RB 3 and, if present, RB 4.
  - if the CELL UPDATE CONFIRM message includes the IE "RLC reset indicator (for U-plane)":
    - reset the AM RLC entities for RB 5 and upwards.
- enter a state according to subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

If the UE after state transition remains CELL_FACH state, it shall

- start the timer T305 using its initial value if timer T305 is not running and periodical cell update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity"~~requested in system information block type 1~~;
- select PRACH according to subclause 8.6.6.2;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - ignore that IE and stop using DRX;

If the UE after state transition enters URA_PCH or CELL_PCH state, it shall

- clear the variable C_RNTI;
- stop using that C_RNTI just cleared from the variable C_RNTI in MAC;
- start the timer T305 using its initial value if timer T305 is not running and periodical ~~URA~~ update ~~or cell update~~ has been ~~requested in system information block type 1~~configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity";
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging Occasion and PICH Monitoring Occasion as specified in 8.6.3.2 in CELL_PCH state.

If the UE after the state transition remains in CELL_FACH state and;

- the contents of the variable C_RNTI are empty;

it shall check the value of V302 and

- If V302 is equal to or smaller than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE, and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info", set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info", set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a URA update procedure, stop the URA update procedure and continue with a cell update procedure;
  - set the contents of the CELL UPDATE message according to subclause 8.3.1.3, except for the IE "Cell update cause" which shall be set to "cell reselection";
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - ~~set the content of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;~~
  - ~~submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;~~
  - increment counter V302;

- restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- If V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure, clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure, clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - ~~clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;~~
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - ~~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;
  - the procedure ends.

If the UE after the state transition remains in CELL_FACH state and

- a C-RNTI is stored in the variable C_RNTI;

  or

the UE after the state transition moves to another state than the CELL_FACH state;

the UE shall:

- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE “Ciphering mode info”, the UE shall:
  - include and set the IE "Radio bearer uplink ciphering activation time info” in any response message transmitted below to the value of the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.
- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE “Integrity protection mode info” with the IE “Integrity protection mode command” set to “Modify”:
  - include and set the IE "Integrity protection activation info” in any response message transmitted below to the value of the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- ~~if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:~~
  - ~~include and set the IE "Radio bearer uplink ciphering activation time info" in any response message transmitted below to the value of that variable;~~
- in case of a cell update procedure, set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and clear that entry;

- in case of a cell update procedure, set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS and clear that entry;
- ~~clear that entry.~~
- if the variable PDCP_SN_INFO is non-empty:
  - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;
- transmit a response message as specified in subclause 8.3.1.7;
- clear the variable PDCP_SN_INFO;
- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE “Ciphering mode info”, set the IE “Reconfiguration” in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE “Integrity protection mode info”, set the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- ~~clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;~~
- in case of a cell update procedure, clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- in case of a URA update procedure, clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- ~~clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS.~~

The procedure ends.

8.3.1.7 Transmission of a response message to UTRAN

If the CELL UPDATE CONFIRM message

- includes the IE "RB information to release list";

the UE shall:

- transmit a RADIO BEARER RELEASE COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include the IE "RB information to release list"; and
- includes the IE "RB information to reconfigure list "; or
- includes the IE "RB information to be affected list ";

the UE shall:

- transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- includes "Transport channel information elements";

the UE shall:

- transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- includes "Physical channel information elements";

the UE shall:

- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE “Ciphering mode info”; or
- includes the IE “Integrity protection mode info”; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI";

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE “Ciphering mode info”; and
- does not include the IE “Integrity protection mode info”; and
- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI";

the UE shall:

- transmit no response message.

If the URA UPDATE CONFIRM message:

- includes “CN information elements”; or
- includes the IE “Ciphering mode info”; or
- includes the IE “Integrity protection mode info”; or
- includes any one or both of the IEs "New C-RNTI" and "New U-RNTI";

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the URA UPDATE CONFIRM message:

- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and
- does not include the IE "New U-RNTI"; and
- does not include the IE "New C-RNTI";

the UE shall:

- transmit no response message.

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

- if the variable PDCP_SN_INFO is empty:
  - if the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info"~~variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set~~:
    - when RLC has confirmed the successful transmission of the response message:
      - continue with the remainder of the procedure.
  - if the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message did not contain the IE "Ciphering mode info"~~variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is not set~~:
    - when RLC has been requested to transmit the response message,
      - continue with the remainder of the procedure.
- if the variable PDCP_SN_INFO non-empty:
  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP_SN_INFO:
      - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";
    - continue with the remainder of the procedure.

If the new state is CELL_PCH or URA_PCH, the response message shall be transmitted in CELL_FACH state, and the UE shall:

- when RLC has confirmed the successful transmission of the response message:
  - for each radio bearer in the variable PDCP_SN_INFO:
    - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
      - configure the RLC entity for that radio bearer to "continue";
  - enter the new state (CELL_PCH or URA_PCH, respectively);
- continue with the remainder of the procedure.

8.3.1.7a Physical channel failure

If the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message would cause the UE to transit to CELL_DCH state, and

- in case of a received CELL UPDATE CONFIRM message:
  - if the UE failed to establish the physical channel(s) indicated in the received CELL UPDATE CONFIRM message according to the criteria defined in subclause 8.5.4 are not fulfilled, or
  - the received CELL UPDATE CONFIRM message does not contain dedicated physical channels;
- in case of the UE received a URA UPDATE CONFIRM message;

the UE shall:

- if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
  - the IE “Reconfiguration” in the variable CIPHERING_STATUS is set to TRUE, and/or
  - the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
    - abort the ongoing integrity and/or ciphering reconfiguration;
    - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE “Ciphering mode info”, set the IE “Reconfiguration” in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
    - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE “Integrity protection mode info”, set the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- if V302 is equal to or smaller than N302:
  - in case of a URA update procedure, stop the URA update procedure and continue with a cell update procedure;
  - set the contents of the CELL UPDATE message according to subclause 8.3.1.3, except for the IE “Cell update cause” which shall be set to “Radio link failure”;
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- If V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure, clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure, clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

- clear the variable ESTABLISHED_RABS;
- enter idle mode;

8.3.1.8 Unsupported configuration by the UE

If the UE does not support the configuration in the CELL UPDATE CONFIRM message and/or the variable UNSUPPORTED_CONFIGURATION is set to TRUE, the UE shall:

- if V302 is equal to or smaller than N302, the UE shall:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE, and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info", set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info", set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - set the variable FAILURE_INDICATOR to TRUE;
  - set the variable FAILURE_CAUSE to "Unsupported configuration";
  - set the content of the CELL UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode.
  - ~~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;

- And the procedure ends.

8.3.1.9 Invalid configuration

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

- if V302 is equal to or smaller than N302, the UE shall:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE, and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info", set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info", set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - set the variable FAILURE_INDICATOR to TRUE;
    - set the variable FAILURE_CAUSE to "Invalid configuration";
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - ~~set the variable FAILURE_INDICATOR to TRUE;~~
  - ~~set the variable FAILURE_CAUSE to "Invalid configuration";~~
  - ~~set the content of the CELL UPDATE message according to subclause 8.3.1.3;~~
  - ~~submit the CELL UPDATE message for transmission on the uplink CCCH;~~
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;

- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- enter idle mode;
- ~~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;
- The procedure ends.

8.3.1.9a Incompatible simultaneous reconfiguration

In case of a cell update procedure and if the received CELL UPDATE CONFIRM message:

- includes "RB information elements"; and/or
- includes "Transport channel information elements"; and/or
- includes "Physical channel information elements"; and
- the variable ORDERED_RECONFIGURATION is set to TRUE because of an ongoing Reconfiguration procedure

and/or

- if the variable INCOMPATIBLE_SECURITY_RECONFIGURATION becomes set to TRUE of the received CELL UPDATE CONFIRM message

the UE shall:

- if V302 is equal to or smaller than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
    - the IE “Reconfiguration” in the variable CIPHERING_STATUS is set to TRUE, and/or
    - the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE “Ciphering mode info”, set the IE “Reconfiguration” in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE “Integrity protection mode info”, set the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - set the variable FAILURE_INDICATOR to TRUE;
  - set the variable FAILURE_CAUSE to "Incompatible simultaneous reconfiguration";
  - set the content of the CELL UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
  - The procedure ends.

8.3.1.10 Confirmation error of URA ID list

If the URA UPDATE CONFIRM message causes a confirmation error of URA identity list as specified in subclause 8.6.2.1 the UE shall:

- check the value of V302, and:
- if V302 is smaller or equal than N302;
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE, and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info", set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info", set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - set the IEs in the URA UPDATE message according to subclause 8.3.1.3;
  - submit the URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302:
  - release all its radio resources;

- clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- clear the variable PDCP_SN_INFO;
- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- enter idle mode;
- perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
- ~~A connection failure may be indicated to the non-access stratum;~~
- The procedure ends.

8.3.1.11 Invalid CELL UPDATE CONFIRM/URA UPDATE CONFIRM message

If the UE receives an CELL UPDATE CONFIRM/URA UPDATE CONFIRM message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- If V302 is equal to or smaller than N302, the UE shall:
  - set the variable PROTOCOL_ERROR_INDICATOR to TRUE,;
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - ~~set the content of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;~~
  - ~~submit the CELL UPDATE message for transmission on the uplink CCCH;~~
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - in case of a cell update procedure, clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure, clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - ~~clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;~~
  - release all its radio resources;

- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- enter idle mode;
- ~~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;
- The procedure ends.

8.3.1.12 T302 expiry or ~~, URA reselection,~~ cell reselection ~~or DPCH failure~~

If any or several of the following conditions are true:

- expiry of timer T302;
- reselection to another UTRA cell (including the previously serving cell) ~~when waiting for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message~~ before completion of the cell update or URA update procedure;
- ~~the UE failed to establish the dedicated channel according to the CELL UPDATE CONFIRM message:~~

the UE shall:

- check whether it is still in "in service area" (see subclause 8.5.5.2).
- if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
  - the IE “Reconfiguration” in the variable CIPHERING_STATUS is set to TRUE, and/or
  - the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
    - abort the ongoing integrity and/or ciphering reconfiguration;
    - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE “Ciphering mode info”, set the IE “Reconfiguration” in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
    - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE “Integrity protection mode info”, set the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- in case of a cell update procedure, clear any entry for the CELL UPDATE CONFIRM message in the table “Accepted transactions” in the variable TRANSACTIONS;
- in case of a URA update procedure, clear any entry for the URA UPDATE CONFIRM message in the table “Accepted transactions” in the variable TRANSACTIONS;
- If the UE detects "in service area", and:
- if V302 is equal to or smaller than N302, the UE shall
  - if the UE performed cell re-selection:
    - delete its C-RNTI;
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;

- submit the CELL UPDATE message for transmission on the uplink CCCH;
- in case of a URA update procedure:
  - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
  - submit the URA UPDATE message for transmission on the uplink CCCH;
- ~~set the contents of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;~~
- ~~submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;~~
- increment counter V302;
- restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - in case of a cell update procedure, clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure, clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - ~~clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;~~
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - ~~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;
  - and the procedure ends.

If the UE does not detect "in service area", it shall:

- continue searching for "in service area".

8.3.1.13 T314 expiry

Upon expiry of timer T314 the UE shall:

- if timer T302 is running:
  - continue awaiting response message from UTRAN;
- if timer T302 is not running and timer T315 is running:
  - set IE "T314 expired" in variable RB_TIMER_INDICATOR to TRUE;

- release locally all radio bearers which are associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";
- indicate release of those radio access bearers to upper layers;
- delete all information about those radio access bearers from the variable ESTABLISHED_RABS;

~~. A local release indication shall be given to the non-access stratum.~~

- if timers T302 and T315 are not running:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - ~~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;
  - and the procedure ends.

8.3.1.14 T315 expiry

Upon expiry of timer T315 the UE shall:

- if timer T302 is running:
  - continue awaiting response message from UTRAN;
- if timer T302 is not running and timer T314 is running:
  - set IE "T315 expired" in variable RB_TIMER_INDICATOR to TRUE;
  - release locally all radio bearers which are associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "~~useT314~~ useT315" ~~. A local release indication shall be given to the non-access stratum~~.
  - indicate release of those radio access bearers to upper layers;
  - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;
- if timers T302 and T314 are not running:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;

- clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- release all its radio resources;
- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- enter idle mode;
- ~~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;
- and the procedure ends.

8.3.1.15 Reception of the UTRAN MOBILITY INFORMATION CONFIRM message by the UTRAN

See subclause 8.3.3.4.

8.3.2 URA update

See subclause 8.3.1.

8.3.3 UTRAN mobility information

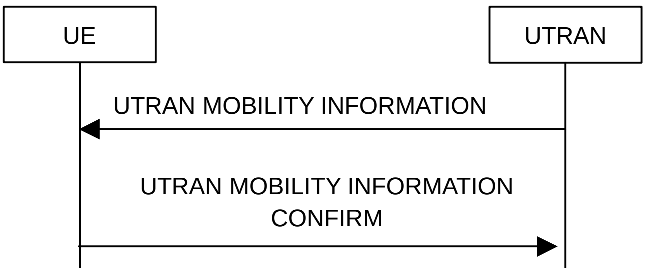


Figure 48: UTRAN mobility information procedure, normal flow

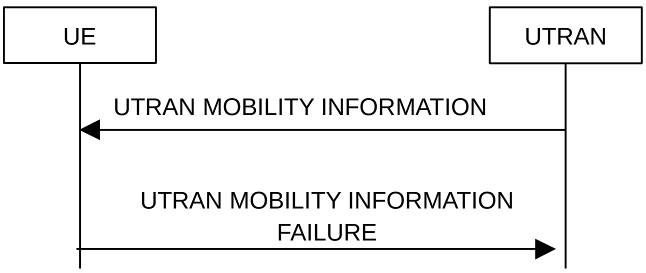


Figure 49: UTRAN mobility information procedure, failure case

8.3.3.1 General

The purpose of this procedure is to allocate any one or a combination of the following to a UE in connected mode:

- a new C-RNTI;

- a new U-RNTI;
- other mobility related information.

8.3.3.2 Initiation

To initiate the procedure UTRAN transmits a UTRAN MOBILITY INFORMATION message to the UE on the downlink DCCH.

8.3.3.3 Reception of UTRAN MOBILITY INFORMATION message by the UE

When the UE receives a UTRAN MOBILITY INFORMATION message, it shall:

- act on received information elements as specified in subclause 8.6;
- if the IE "UE Timers and constants in connected mode" is present:
  - use the values in the IE "UE Timers and constants in connected mode" for the relevant timers and constants, replacing any previously used values including those read in idle mode in system information block type 1;
- set the IE "RRC transaction identifier" in the UTRAN MOBILITY INFORMATION CONFIRM message to the value of "RRC transaction identifier" in the entry for the UTRAN MOBILITY INFORMATION message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- if the UTRAN MOBILITY INFORMATION message contained the IE “Ciphering mode info”, the UE shall:
  - include and set the IE "Radio bearer uplink ciphering activation time info" to the value of the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.
- if the UTRAN MOBILITY INFORMATION message contained the IE “Integrity protection mode info” with the IE “Integrity protection mode command” set to “Modify”:
  - include and set the IE "Integrity protection activation info" to the value of the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- ~~if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:~~
  - ~~include and set the IE "Radio bearer uplink ciphering activation time info" in the UTRAN MOBILITY INFORMATION CONFIRM message to the value of that variable;~~
- if the variable PDCP_SN_INFO is non-empty:
  - include the IE "RB with PDCP information list" in the UTRAN MOBILITY INFORMATION CONFIRM message and set it to the value of the variable PDCP_SN_INFO;
- transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC;
- if the variable PDCP_SN_INFO is empty; and
  - if the UTRAN MOBILITY INFORMATION message contained the IE “Ciphering mode info”~~variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set~~:
    - when RLC has confirmed the successful transmission of the UTRAN MOBILITY INFORMATION CONFIRM message, perform the actions below.
  - if the UTRAN MOBILITY INFORMATION message did not contain the IE “Ciphering mode info”~~variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is not set~~:
    - when RLC has been requested to transmit the UTRAN MOBILITY INFORMATION CONFIRM message, perform the actions below.
- if the variable PDCP_SN_INFO is non-empty: [Note to Hans: Indentation reduced one step on the blue-marked paragraphs]

- when RLC has confirmed the successful transmission of the UTRAN MOBILITY INFORMATION CONFIRM message:
  - for each radio bearer in the variable PDCP_SN_INFO:
    - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
    - configure the RLC entity for that radio bearer to "continue";
  - clear the variable PDCP_SN_INFO;
- if the UTRAN MOBILITY INFORMATION message contained the IE “Ciphering mode info”, set the IE “Reconfiguration” in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- if the UTRAN MOBILITY INFORMATION message contained the IE “Integrity protection mode info”, set the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

The procedure ends ~~when of the UTRAN MOBILITY INFORMATION CONFIRM message has been submitted to lower layers for transmission~~.

8.3.3.4 Reception of an UTRAN MOBILITY INFORMATION CONFIRM message by the UTRAN

When the network receives UTRAN MOBILITY INFORMATION CONFIRM message, UTRAN may delete any old U-RNTI. The procedure ends.

8.3.3.5 Cell re-selection

If the UE performs cell re-selection, the UE shall:

- initiate a cell update procedure according to subclause 8.3.1;
- if the UTRAN MOBILITY INFORMATION message contains the IE "New C-RNTI"; and
- if the UE has not yet submitted the UTRAN MOBILITY INFORMATION CONFIRM message to lower layers for transmission;
  - transmit a UTRAN MOBILITY INFORMATION FAILURE message on the uplink DCCH using AM RLC;
  - set the IE "RRC transaction identifier" in the UTRAN MOBILITY INFORMATION FAILURE message to the value of "RRC transaction identifier" in the entry for the UTRAN MOBILITY INFORMATION message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry.
  - set the IE "failure cause" to the cause value "cell reselection";
  - when the UTRAN MOBILITY INFORMATION FAILURE message has been submitted to lower layers for transmission:
    - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid UTRAN MOBILITY INFORMATION message has not been received and the procedure ends.
- otherwise;
  - continue the procedure normally.

8.3.3.5a Incompatible simultaneous security reconfiguration

If the variable INCOMPATIBLE_SECURITY_RECONFIGURATION becomes set to TRUE of the received UTRAN MOBILITY INFORMATION message, the UE shall:

- transmit a UTRAN MOBILITY INFORMATION FAILURE message on the uplink DCCH using AM RLC;

- set the IE "RRC transaction identifier" in the UTRAN MOBILITY INFORMATION FAILURE message to the value of "RRC transaction identifier" in the entry for the UTRAN MOBILITY INFORMATION message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "incompatible simultaneous reconfiguration";
- when the UTRAN MOBILITY INFORMATION FAILURE message has been delivered to lower layers for transmission:
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the UTRAN MOBILITY INFORMATION message has not been received and the procedure ends.

8.3.3.6 Invalid UTRAN MOBILITY INFORMATION message

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

- transmit a UTRAN MOBILITY INFORMATION FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the UTRAN MOBILITY INFORMATION FAILURE message to the value of "RRC transaction identifier" in the entry for the UTRAN MOBILITY INFORMATION message in the table "Rejected transactions" in the variable TRANSACTIONS, and;
- clear that entry.
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the UTRAN MOBILITY INFORMATION FAILURE message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid UTRAN MOBILITY INFORMATION message has not been received and the procedure ends.

8.3.4 Active set update

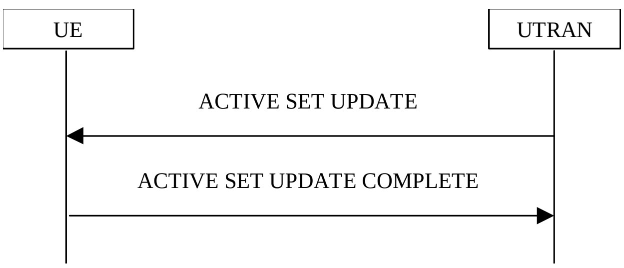


Figure 50: Active Set Update procedure, successful case

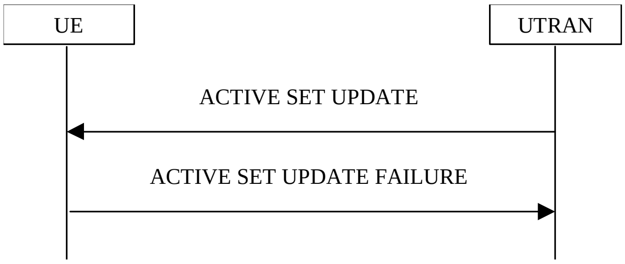


Figure 51: Active Set Update procedure, failure case

8.3.4.1 General

The purpose of the active set update procedure is to update the active set of the connection between the UE and UTRAN. This procedure shall be used in CELL_DCH state. The UE should keep on using the old RLs while configuring the new RLs. Also the UE should keep the transmitter turned on during the procedure. This procedure is only used in FDD mode.

8.3.4.2 Initiation

The procedure is initiated when UTRAN orders a UE in CELL_DCH state, to make the following modifications of the active set of the connection:

a) Radio link addition;

b) Radio link removal;

c) Combined radio link addition and removal.

In case a) and c), UTRAN should:

- prepare new additional radio link(s) in the UTRAN prior to the command to the UE.

In all cases, UTRAN should:

- send an ACTIVE SET UPDATE message on downlink DCCH using AM or UM RLC.

UTRAN should include the following information:

- IE "Radio Link Addition Information": Downlink DPCH information and other optional parameters relevant for the radio links to be added along with the IE "Primary CPICH info" used for the reference ID to indicate which radio link to add. This IE is needed in cases a) and c) listed above;

- IE "Radio Link Removal Information": IE "Primary CPICH info" used for the reference ID to indicate which radio link to remove. This IE is needed in cases b) and c) listed above.

~~If SRNS relocation is performed simultaneously during active set update procedure when all radio links are replaced simultaneously, the UTRAN shall include the IE "U-RNTI" and IE "CN domain identity" and IE "NAS system information" in the ACTIVE SET UPDATE messages.~~

8.3.4.3 Reception of an ACTIVE SET UPDATE message by the UE

~~- Upon reception of an ACTIVE SET UPDATE message the UE shall store the received IE "Radio Link Addition Information" and the IE "Radio Link Removal Information" to the variable ORDERED_ASU.~~

Upon reception of an ACTIVE SET UPDATE message ~~T~~the UE shall act upon all received information elements as specified in 8.6, unless specified otherwise in the following. The UE shall:

- first add the RLs indicated in the IE "Radio Link Addition Information";

- remove the RLs indicated in the IE "Radio Link Removal Information". If the UE active set is full or becomes full, an RL, which is included in the IE "Radio Link Removal Information" for removal, shall be removed before adding RL, which is included in the IE "Radio Link Addition Information" for addition;

- ~~if the ACTIVE SET UPDATE message includes the IE "U-RNTI":~~
    - ~~update its identity;~~
- ~~if the ACTIVE SET UPDATE message includes the IE "CN domain identity" and the IE "NAS system information":~~
    - ~~forward the content of the IE to the non-access stratum entity of the UE indicated by the IE "CN domain identity";~~
- if the ACTIVE SET UPDATE message contained the IE "Ciphering mode info", the UE shall:
    - include and set the IE "Radio bearer uplink ciphering activation time info" to the value of the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.
- if the ACTIVE SET UPDATE message contained the IE "Integrity protection mode info" with the IE "Integrity protection mode command" set to "Modify":
    - include and set the IE "Integrity protection activation info" to the value of the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- if the variable PDCP_SN_INFO is non-empty:
    - include the IE "RB with PDCP information list" in the ACTIVE SET UPDATE COMPLETE message and set it to the value of the variable PDCP_SN_INFO;
- if the ACTIVE SET UPDATE message includes the IE 'TFCI combining indicator' associated with a radio link to be added:
    - configure Layer 1 to soft combine TFCI (field 2) of this new link with those links already in the TFCI (field 2) combining set;
- transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC without waiting for the Physical Layer synchronization;
- set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE COMPLETE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- ~~if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:~~
    - ~~include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable;~~
- if the variable PDCP_SN_INFO is empty; and
    - if the ACTIVE SET UPDATE message contained the IE "Ciphering mode info":
        - when RLC has confirmed the successful transmission of the ACTIVE SET UPDATE COMPLETE message, perform the actions below.
    - if the ACTIVE SET UPDATE message did not contain the IE "Ciphering mode info":
        - when RLC has been requested to transmit the ACTIVE SET UPDATE COMPLETE message, perform the actions below.
- if the variable PDCP_SN_INFO is non-empty:
    - when RLC has confirmed the successful transmission of the ACTIVE SET UPDATE COMPLETE message:
        - for each radio bearer in the variable PDCP_SN_INFO:
            - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
            - configure the RLC entity for that radio bearer to "continue";

- clear the variable PDCP_SN_INFO;

- ~~when the ACTIVE SET UPDATE COMPLETE message has been submitted to lower layers for transmission:~~

  - ~~clear the contents of the variable ORDERED_ASU;~~

- if the ACTIVE SET UPDATE message contained the IE "Ciphering mode info", set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE and clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;

- if the ACTIVE SET UPDATE message contained the IE "Integrity protection mode info", set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE and clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

- ~~clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and~~ the procedure ends on the UE side. [Note to Hans: paragraph type changed to B1]

8.3.4.4 Unsupported configuration in the UE

If UTRAN instructs the UE to use a configuration that it does not support, the UE shall:

- keep the active set ~~and the contents of the variable ORDERED_ASU~~, as it was before the ACTIVE SET UPDATE message was received;
- transmit an ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to "configuration unacceptable";
- when the ACTIVE SET UPDATE FAILURE message has been submitted to lower layers for transmission the procedure ends on the UE side.

8.3.4.5 Invalid configuration

If any of the following conditions are valid:

- a radio link indicated by the IE "Downlink DPCH info for each RL" in the IE "Radio link addition information" has a different spreading factor than the spreading factor for the radio links in the active set that will be established at the time indicated by the IE "Activation time"; and/or
- ~~a radio link in the IE "Radio Link Removal Information" in the ACTIVE SET UPDATE message is not part of the active set that will be established at the time indicated by the IE "Activation time"; and/or~~
- a radio link in the IE "Radio link addition information" is also present in the IE "Radio Link Removal Information"; and/or
- the IE "Radio Link Removal Information" contains all the radio links ~~which are part of~~which are part of or will be part of the active set ~~that will be established~~ at the time indicated by the IE "Activation time"; and/or
- the variable INVALID_CONFIGURATION is set to TRUE;

the UE shall:

- keep the active set ~~and the contents of the variable ORDERED_ASU~~, as it was before the ACTIVE SET UPDATE message was received;
- transmit an ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC;

- set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to "Invalid configuration";
- When the ACTIVE SET UPDATE FAILURE message has been submitted to lower layers for transmission the procedure ends on the UE side.

8.3.4.5a Incompatible simultaneous ~~security~~ reconfiguration

If the variable INCOMPATIBLE_SECURITY_RECONFIGURATION becomes set to TRUE of the received ACTIVE SET UPDATE message, the UE shall:

- transmit a ACTIVE SET UPDATE FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "incompatible simultaneous reconfiguration";
- when the ACTIVE SET UPDATE FAILURE message has been delivered to lower layers for transmission:
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the ACTIVE SET UPDATE message has not been received and the procedure ends.

If the variable ORDERED_RECONFIGURATION is set to TRUE; and

- if the activation time for the procedure that has set variable ORDERED_RECONFIGURATION, and the activation time for the Active Set Update procedure are within a time window of 5 frames, the UE may:
  - transmit a ACTIVE SET UPDATE FAILURE message on the uplink DCCH using AM RLC;
  - set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "failure cause" to the cause value "incompatible simultaneous reconfiguration";
  - when the ACTIVE SET UPDATE FAILURE message has been delivered to lower layers for transmission:
    - continue with any ongoing processes and procedures~~resume normal operation~~ as if the ACTIVE SET UPDATE message has not been received and the procedure ends.

8.3.4.6 Reception of the ACTIVE SET UPDATE COMPLETE message by the UTRAN

When the UTRAN has received the ACTIVE SET UPDATE COMPLETE message,

- the UTRAN may remove radio link(s) that are indicated to remove to the UE in case b) and c); and
- the procedure ends on the UTRAN side.

8.3.4.7 Reception of the ACTIVE SET UPDATE FAILURE message by the UTRAN

When the UTRAN has received the ACTIVE SET UPDATE FAILURE message, the UTRAN may delete radio links that were included in the IE "Radio Link Addition Information" for addition. The procedure ends on the UTRAN side.

8.3.4.8 Invalid ACTIVE SET UPDATE message

If ~~none of the variables ORDERED_CONFIG or ORDERED_ASU are set and~~ the ACTIVE SET UPDATE message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- transmit a ACTIVE SET UPDATE FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the ACTIVE SET UPDATE FAILURE message has been delivered to lower layers for transmission:
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid ACTIVE SET UPDATE message has not been received and the procedure ends.

8.3.4.9 Reception of an ACTIVE SET UPDATE message in wrong state

If the UE is in another state than CELL_DCH state upon reception of the ACTIVE SET UPDATE message, the UE shall perform procedure specific error handling as follows:

- transmit a ACTIVE SET UPDATE FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state";
- when the ACTIVE SET UPDATE FAILURE message has been delivered to lower layers for transmission:
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the ACTIVE SET UPDATE message has not been received and the procedure ends.

8.3.5 Hard handover

8.3.5.1 Timing re-initialised hard handover

8.3.5.1.1 General

The purpose of the timing re-initialised hard handover procedure is to remove all the RL(s) in the active set and establish new RL(s) along with a change in the UL transmission timing and the CFN in the UE according to the SFN of the target cell.(see subclause 8.5.15).

This procedure is initiated when UTRAN does not know the target SFN timing before hard handover.

8.3.5.1.2 Initiation

Timing re-initialised hard handover initiated by the UTRAN is normally performed by using the procedure "Physical channel reconfiguration" (subclause 8.2.6), but may also be performed by using either one of the following procedures:

- "radio bearer establishment" (subclause 8.2.1);
- "Radio bearer reconfiguration" (subclause 8.2.2);
- "Radio bearer release" (subclause 8.2.3); or
- "Transport channel reconfiguration" (subclause 8.2.4).

If IE "Timing indication" has the value "initialise", UE shall execute the Timing Re-initialised hard handover procedure by following the procedure indicated in the subclause relevant to the procedure chosen by the UTRAN.

8.3.5.2 Timing-maintained hard handover

8.3.5.2.1 General

The purpose of the Timing-maintained hard handover procedure is to remove all the RL(s) in the active set and establish new RL(s) while maintaining the UL transmission timing and the CFN in the UE.

This procedure can be initiated only if UTRAN knows the target SFN timing before hard handover. The target SFN timing can be known by UTRAN in the following 2 cases:

- UE reads SFN when measuring "Cell synchronisation information" and sends it to the UTRAN in MEASUREMENT REPORT message.
- UTRAN internally knows the time difference between the cells.

8.3.5.2.2 Initiation

Timing-maintained hard handover initiated by the network is normally performed by using the procedure "Physical channel reconfiguration" (subclause 8.2.6), but may also be performed by using either one of the following procedures:

- "radio bearer establishment" (subclause 8.2.1);
- "Radio bearer reconfiguration" (subclause 8.2.2);
- "Radio bearer release" (subclause 8.2.3); or
- "Transport channel reconfiguration" (subclause 8.2.4).

If IE "Timing indication" has the value "maintain", UE shall initiate the Timing-maintained hard handover procedure by following the procedure indicated in the subclause relevant to the procedure chosen by the UTRAN.

8.3.6 Inter-RAT handover to UTRAN

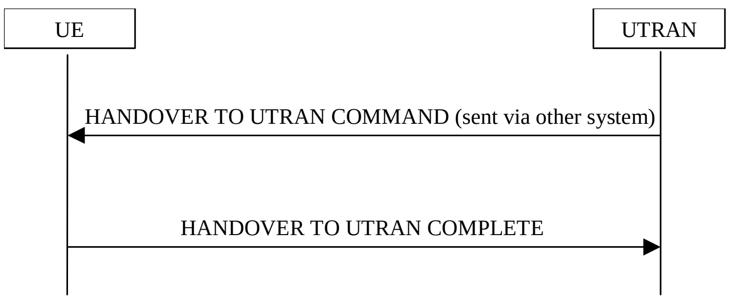


Figure 52: Inter-RAT handover to UTRAN, successful case

8.3.6.1 General

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

8.3.6.2 Initiation

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

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

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

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

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

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

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

8.3.6.3 Reception of HANDOVER TO UTRAN COMMAND message by the UE

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

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

- store a U-RNTI value (32 bits), which is derived by the IEs "SRNC identity" (12 bits) and "S-RNTI 2" (10 bits) included in IE "U-RNTI-short". In order to produce a full size U-RNTI value, a full size "S-RNTI" (20 bits) shall be derived by padding the IE "S-RNTI 2" with 10 zero bits in the most significant positions; and
- initialise the variable ESTABLISHED_SIGNALLING_CONNECTIONS with the signalling connections that remains after the handover according to the specifications of the source RAT;
- if IE "Specification mode" is set to "Preconfiguration":
  - initiate the ~~signalling link, the RB(s) and traffic channel(s)~~radio bearer and transport channel configuration in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity";
  - initiate the physical channels in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity" and the received physical channel information elements;
  - store information about the established radio access bearers and radio bearers according to the IE “Predefined radio configuration identity” and the IE “RAB Info Post” in the variable ESTABLISHED_RABS and the IE “Re-establishment timer” in the IE “RAB Info” in the variable ESTABLISHED_RABS shall be set to “useT314”;
- if IE "Specification mode" is set to "Complete specification":

- initiate the ~~RB(s) and traffic channels~~radio bearer, transport channel and physical channel configuration in accordance with the received radio bearer, transport channel and physical channel information elements;

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

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

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

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

- when of the HANDOVER TO UTRAN COMPLETE message has been submitted to lower layers for transmission:
  - if the IE "Transport format combination subset" was not included in the HANDOVER TO UTRAN COMMAND message or in the predefined parameters;
    - set the IE "Current TFC subset" in the variable TFS_SUBSET to "Full transport format combination set";
  - set the IE "Status" in the variable CIPHERING_STATUS to "Not started";
  - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE;
  - set the IE "Status" in the variable INTEGRITY_ PROTECTION_INFO to "Not started";
  - set the IE "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to "Never been active";
  - set the IE "Reconfiguration" in the variable INTEGRITY_ PROTECTION _INFO to FALSE;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - set the variable ORDERED_RECONFIGURATION to FALSE;
  - set the variable FAILURE_INDICATOR to FALSE;
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - set the variable INVALID_CONFIGURATION to FALSE;
  - set the variable PROTOCOL_ERROR_INDICATOR, TFC_SUBSET to FALSE;
  - set the variable PROTOCOL_ERROR_REJECT to FALSE;
  - set the variable TGSN_REPORTED to FALSE;
  - set the variable UNSUPPORTED_CONFIGURATION to FALSE;
  - clear all optional IEs in all variables, except those optional IEs that are set in this procedure;
  - ~~,~~ the procedure ends.

8.3.6.4 Invalid Handover to UTRAN command message

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

- ~~Resume~~ Keep the connection with the source radio access technology used before the handover ;

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

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

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

8.3.6.5 UE fails to perform handover

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

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

8.3.6.6 Reception of message HANDOVER TO UTRAN COMPLETE by the UTRAN

Upon receiving a HANDOVER TO UTRAN COMPLETE message, UTRAN should consider the inter-RAT handover procedure as having been completed successfully and indicate this to the Core Network.

8.3.7 Inter-RAT handover from UTRAN

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

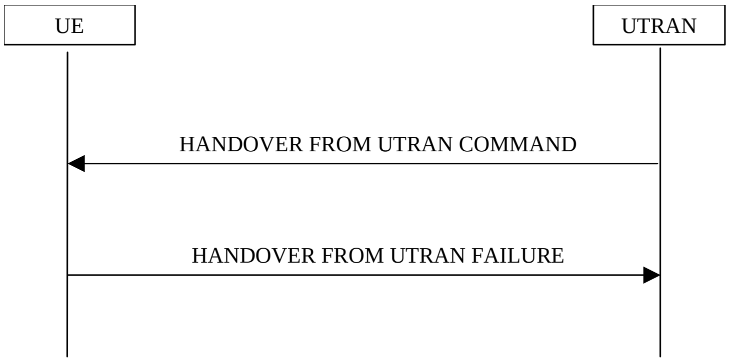


Figure 54: Inter-RAT handover from UTRAN, failure case

8.3.7.1 General

The purpose of the inter-RAT handover procedure is to, under the control of the network, transfer a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH and CELL_FACH states.

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

The UE does not need to support handovers involving more than one RAB in the CS domain. Furthermore, the UE need not support simultaneous handover of PS domain RABs in addition to the RAB used for CS domain services. Nevertheless, the procedure specification provided in the following covers these cases. In case a UE receives a request for a handover case not supported, it shall apply the procedure in subclause 8.3.7.5.

8.3.7.2 Initiation

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

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

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

The UE shall ~~take the following actions~~:

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

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

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

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

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

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

8.3.7.4 Successful completion of the inter-RAT handover

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

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

8.3.7.5 UE fails to complete requested handover

If the UE does not support the requested handover scenario or does not succeed in establishing the connection to the target radio access technology, it shall

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

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

- clear that entry;

- set the cause value in IE "failure cause" to "Configuration unacceptable" in case the UE does not support the requested configuration. This case includes the case in which the UE does not support the requested handover scenario e.g. handover including multiple CS domain RABs.
- set the cause value in IE "failure cause" to "Physical channel failure" in case the UE did not succeed in establishing the radio connection to the target RAT.
- transmit the HANDOVER FROM UTRAN FAILURE message on uplink DCCH using AM RLC. When the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission, the procedure ends;

8.3.7.6 Invalid HANDOVER FROM UTRAN COMMAND message

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

- set the IE "failure cause" to the cause value "Inter-RAT protocol error";
- include the IE "Inter-RAT message" in case the target RAT provides further details about the inter RAT protocol error;
- transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC
- When the transmission of the HANDOVER FROM UTRAN FAILURE message has been confirmed by RLC, the UE shall continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received and the procedure ends.

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

- set the IE "RRC transaction identifier" in the HANDOVER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received
  - and the procedure ends.

8.3.7.7 Reception of an HANDOVER FROM UTRAN FAILURE message by UTRAN

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

8.3.8 Inter-RAT cell reselection to UTRAN

8.3.8.1 General

The purpose of the inter-RAT cell reselection procedure to UTRAN is to transfer, under the control of the UE and to some extent the source radio access technology, a connection between the UE and another radio access technology (e.g. GSM/GPRS, but not UTRAN) to UTRAN.

8.3.8.2 Initiation

When the UE makes an inter-RAT cell reselection to UTRAN according to the criteria specified in 3GPP TS 25.304, it shall initiate this procedure. The inter-RAT cell reselection made by the UE may use system information broadcast from the source radio access technology or UE dedicated information.

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

8.3.8.3 UE fails to complete an inter-RAT cell reselection

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

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

8.3.9 Inter-RAT cell reselection from UTRAN

8.3.9.1 General

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

8.3.9.2 Initiation

This procedure is applicable in states CELL_FACH, CELL_PCH or URA_PCH.

When the UE based on received system information makes a cell reselection to a radio access technology other than UTRAN, e.g. GSM/GPRS, according to the criteria specified in 3GPP TS 25.304, the UE shall.

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

8.3.9.3 Successful cell reselection

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

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

8.3.9.4 Expiry of timer T309

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

8.3.10 Inter-RAT cell change order to UTRAN

8.3.10.1 General

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

8.3.10.2 Initiation

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

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

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

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

8.3.10.3 UE fails to complete an inter-RAT cell change order

If the inter-RAT cell reselection fails the UE shall return to the other radio access technology and proceed as specified in the appropriate specifications for that RAT.

NOTE 3: The cell change was network ordered. Therefore, failure to change to the target cell should not cause the UE to move to UE- controlled cell selection.

8.3.11 Inter-RAT cell change order from UTRAN

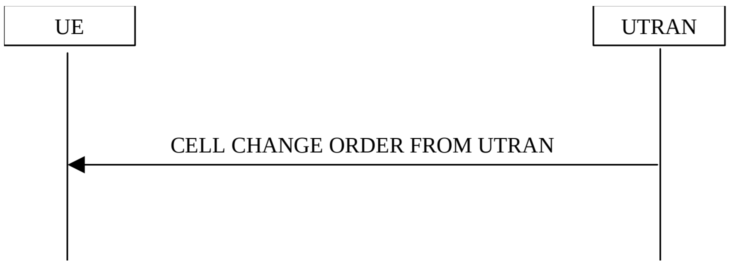


Figure 55: Inter–RAT cell change order from UTRAN

8.3.11.1 General

The purpose of the inter-RAT cell change order procedure is to transfer, under the control of the network, a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH and CELL_FACH state.

NOTE 1: This procedure applies when the UE has at least one RAB in use in the PS domain.

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

8.3.11.2 Initiation

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

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

8.3.11.3 Reception of an CELL CHANGE ORDER FROM UTRAN message by the UE

The UE shall take the following actions:

- establish the connection to the other radio access technology, as specified within IE "Target cell info". This IE specifies the target cell identity, in accordance with the specifications for that other RAT. In case the target cell is a GSM/ GPRS cell, IE "Target cell info" may also include IE "NC mode", which specifies the cell selection mode to be applied in the target cell; and
- if IE "NC mode" is not included in the CELL CHANGE ORDER FROM UTRAN:
    - retrieve it from the target cell as specified in 3GPP TS 04.18;
    - act upon IE "NC mode" as specified in 3GPP TS 04.18.
- if IE "RAB info" is not included in the CELL CHANGE ORDER FROM UTRAN message:
    - initiate cell change for all RABs used by the UE.
- if one or more IEs "RAB info" are included in the CELL CHANGE ORDER FROM UTRAN message:
    - initiate handover for the RABs specified within this IE(s). Other RABs used by the UE, if any, shall not be affected.
- switch the current connection to the other radio access technology.

NOTE 2: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

8.3.11.4 Successful completion of the cell change order

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

NOTE 3: The release of the UMTS radio resources is initiated from another RAT.

8.3.11.5 UE fails to complete requested cell change order

If the UE does not succeed in establishing the connection to the target RAT, it shall

- resume the connection to UTRAN using the resources used before receiving the CELL CHANGE ORDER FROM UTRAN message
- transmit the CELL CHANGE FAILURE FROM UTRAN message on uplink DCCH using AM RLC. When the CELL CHANGE FAILURE FROM UTRAN message has been submitted to lower layers for transmission, the procedure ends;
- set the cause value as specified within IE "failure cause" as follows:
- to " Configuration unacceptable" in case the UE does not support the requested configuration;
- to "Physical channel failure" in case the UE did not succeed to establish the radio connection.

NOTE 4: The cell change was network ordered. Therefore, failure to change to the target cell should not cause the UE to move to UE- controlled cell selection.

8.4 Measurement procedures

The UE measurements are grouped into 6 different categories, according to what the UE should measure.

The different types of measurements are:

- **Intra-frequency measurements**: measurements on downlink physical channels at the same frequency as the active set. Detailed description is found in subclause 14.1.
- **Inter-frequency measurements**: measurements on downlink physical channels at frequencies that differ from the frequency of the active set. Detailed description is found in subclause 14.2.
- **Inter-RAT measurements**: measurements on downlink physical channels belonging to another radio access technology than UTRAN, e.g. PDC or GSM. Detailed description is found in subclause 14.3.
- **Traffic volume measurements**: measurements on uplink traffic volume. Detailed description is found in subclause 14.4.
- **Quality measurements**: Measurements of quality parameters, e.g. downlink transport block error rate. Detailed description is found in subclause 14.5
- **Internal measurements**: Measurements of UE transmission power and UE received signal level. Detailed description is found in subclause 14.6.
- **UE positioning measurements:** Measurements of UE position. Detailed description is found in subclause 14.7.

The UE shall support a number of measurements running in parallel. The UE shall also support that each measurement is controlled and reported independently of every other measurement.

Cells that the UE is monitoring (e.g. for handover measurements) are grouped in the UE into three different categories:

1. Cells, which belong to the **active set.** User information is sent from all these cells and they are simultaneously demodulated and coherently combined. In FDD, these cells are involved in soft handover. In TDD the active set always comprises of one cell only.
2. Cells, which are not included in the active set, but are monitored according to a neighbour list assigned by the UTRAN belong to the **monitored set.**
3. Cells, which are neither included in the active set nor in the monitored set, and are detected by the UE without receiving a neighbour list from the UTRAN belong to the **detected set.** Intra-frequency measurements of the unlisted set is required only of UEs in CELL_DCH state.

UTRAN may control a measurement in the UE either by broadcast system information and/or by transmitting a MEASUREMENT CONTROL message. The latter message includes the following measurement control information:

1. **Measurement type**: One of the types listed above describing what the UE shall measure.
2. **Measurement identity**: A reference number that should be used by the UTRAN when modifying or releasing the measurement and by the UE in the measurement report.
3. **Measurement command**: One out of three different measurement commands.
    - Setup: Setup a new measurement.
    - Modify: Modify a previously defined measurement, e.g. to change the reporting criteria.
    - Release: Stop a measurement and clear all information in the UE that are related to that measurement.
4. **Measurement objects:** The objects the UE shall measure, and corresponding object information (for example a neighbour cell list).
5. **Measurement quantity:** The quantity the UE shall measure. This also includes the filtering of the measurements. (for example CPICH E_c/N_0)
6. **Reporting quantities:** The quantities the UE shall include in the report in addition to the quantities that are mandatory to report for the specific event.

7. **Measurement reporting criteria**: The triggering of the measurement report, e.g. periodical or event-triggered reporting.

8. **Reporting mode**: This specifies whether the UE shall transmit the measurement report using AM or UM RLC.

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

When the reporting criteria are fulfilled, i.e. a specified event occurred or the time since last report indicated for periodical reporting has elapsed, the UE shall send a MEASUREMENT REPORT message to UTRAN.

In CELL_FACH, CELL_PCH or URA_PCH state, the UE shall perform measurements according to the measurement control information included in System Information Block Type 12, which is transmitted on the BCCH. If System Information Block Type 12 is not transmitted in the cell, it shall perform measurements according to the measurement control information included in System Information Block Type 11, transmitted on the BCCH.

In CELL_DCH state, the UE may be requested by UTRAN to report intra-frequency, inter-frequency and inter-RAT measurements to the UTRAN with a MEASUREMENT REPORT message. The UE may also be requested by the UTRAN to report unlisted cells, which it has detected. The triggering event for the UE to send a MEASUREMENT REPORT message for a detected set is defined in measurement events 1A and 1E in clause 14.

In order to receive information for the immediate establishment of macrodiversity (FDD) or to support the DCA algorithm (TDD), the UTRAN may also indicate to the UE in System Information Block Type 11 or System Information Block Type 12, to append radio link related measurement reports to the following messages when they are sent on common transport channels (e.g., RACH, CPCH):

- RRC CONNECTION REQUEST message sent to establish an RRC connection;
- INITIAL DIRECT TRANSFER message sent uplink to establish a signalling connection;
- CELL UPDATE message sent to respond to a UTRAN originated page;
- MEASUREMENT REPORT message sent to report uplink traffic volume;
- CAPACITY REQUEST message sent to request PUSCH capacity (TDD only).

8.4.1 Measurement control

Figure 56: Measurement Control, normal case

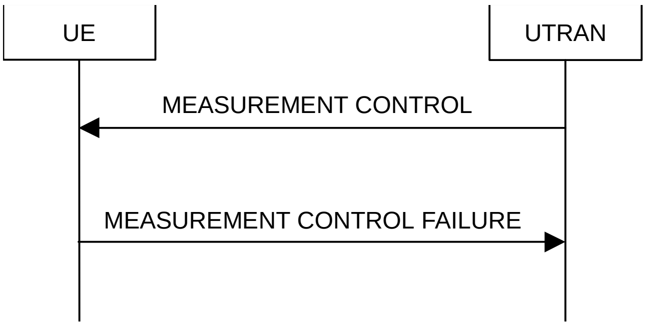


Figure 57: Measurement Control, UE reverts to old measurements

8.4.1.1 General

The purpose of the measurement control procedure is to Setup, modify or release a measurement in the UE.

8.4.1.2 Initiation

The UTRAN may request a measurement by the UE to be setup, modified or released with a MEASUREMENT CONTROL message, which is transmitted on the downlink DCCH using AM RLC.

The UTRAN should take the UE capabilities into account when a measurement is assigned to the UE.

When a new measurement is initiated, UTRAN should set the IE "Measurement identity" to a value, which is not used for other measurements. UTRAN may use several "Measurement identity" for the same "Measurement type". In case of setting several "Measurement identity" within a same "Measurement type", "Measurement object" can be set differently for each measurement with different "Measurement identity ". If no "Measurement object" is indicated for additional measurement within a same "Measurement type" in case of "Measurement type" = "Intra-frequency", it implies that only active set cells are the "Measurement objects".

When a current measurement is modified or released, UTRAN should set the IE "Measurement identity" to a value, which is used for the measurement being modified or released. In case of modifying IEs within a "Measurement identity", it is not needed for UTRAN to indicate the IEs other than modifying IEs, and the UE continues to use the current values of the IEs which are not modified.

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in subclause 8.6 unless otherwise specified below.

The UE shall:

- read the IE "Measurement command";
- if the IE "measurement command" has the value "setup":
  - store this measurement in the variable MEASUREMENT_IDENTITY according to the IE "measurement identity";
  - store into the variable MEASUREMENT_IDENTITY the control information defined by IE "Measurement object", the IE "Measurement quantity", the IE "Reporting quantity", the IE "Measurement reporting criteria", the IE "Measurement validity", the IE "Reporting mode" and if present all IEs "Additional measurement identity", which are valid for this measurement type; and
  - for measurement types "inter-RAT measurement" or "inter-frequency measurement":
    - begin measurements according to the stored control information for this measurement identity optionally with the use of compressed mode if at least one compressed mode pattern sequence is simultaneously activated with inclusion of the IE "DPCH compressed mode status info"; or
  - for any other measurement type:
    - begin measurements according to the stored control information for this measurement identity.
  - if the IE "Measurement command" has the value "modify":
    - retrieve the stored measurement information in variable MEASUREMENT_IDENTITY associated with the identity indicated by the IE "measurement identity";
    - if any of IE "measurement quantity", IE "reporting quantity", IE "measurement reporting criteria", IE "measurement validity", IE "reporting mode" or IE "Additional measurement identity" are present in the MEASUREMENT CONTROL message, the control information defined by these IEs shall replace the corresponding stored information in variable MEASUREMENT_IDENTITY;
    - store the new set of IEs and associate them with the measurement identity;
    - resume the measurements according to the new stored measurement control information.

- if the IE "measurement command has the value "release":
  - terminate the measurement associated with the identity given in the IE "measurement identity";
  - clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY.
- if the IE "DPCH Compressed Mode Status Info" is present, the UE shall:
  - activate the pattern sequence stored in the variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" and begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
  - deactivate the pattern sequence stored in variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "deactivate" and terminate the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each deactivated pattern sequence;
  - clear the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS.
- and the procedure ends.

8.4.1.4 Unsupported measurement in the UE

If UTRAN instructs the UE to perform a measurement that is not supported by the UE, the UE shall:

- retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received;
- transmit a MEASUREMENT CONTROL FAILURE message on the DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the MEASUREMENT CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry.
- set the cause value in IE "failure cause" to "unsupported measurement";
- when the MEASUREMENT CONTROL FAILURE message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid MEASUREMENT CONTROL message has not been received
  - and the procedure ends.

8.4.1.5 Invalid MEASUREMENT CONTROL message

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

- transmit a MEASUREMENT CONTROL FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the MEASUREMENT CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the MEASUREMENT CONTROL message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry.
- set the IE "failure cause" to the cause value "protocol error";

- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the MEASUREMENT CONTROL FAILURE message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid MEASUREMENT CONTROL message has not been received and the procedure ends.

8.4.1.6 Measurements after transition from CELL_DCH to CELL_FACH state

The UE shall obey the follow rules for different measurement types after transiting from CELL_DCH to CELL_FACH state:

8.4.1.6.1 Intra-frequency measurement

The UE shall stop intra-frequency type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_FACH state, the UE shall begin monitoring neighbouring cells listed in the "intra-frequency cell info" received in "System Information Block type 12" (or "System Information Block type 11").

If the UE has no previously assigned, valid intra-frequency measurement for CELL_DCH state, the UE shall store "intra-frequency measurement reporting criteria", from "System Information Block type 12" (or "System Information Block type 11"), for use after a subsequent transition to CELL_DCH state.

If the UE receives the "Intra-frequency reporting quantity for RACH Reporting" and "Maximum number of Reported cells on RACH" IEs from "System Information Block type 12" (or "System Information Block type 11"), the UE use this information for reporting measured results in RACH messages.

8.4.1.6.2 Inter-frequency measurement

The UE shall stop the inter-frequency type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_FACH state, the UE shall begin monitoring neighbouring cells listed in the "inter-frequency cell info" received in "System Information Block type 12" (or "System Information Block type 11").

The UE shall not measure on other frequencies except at the measurement occasions given in subclause 8.5.11.

8.4.1.6.3 Inter-RAT measurement

The UE shall stop the inter-RAT type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_FACH state, the UE shall begin monitoring neighbouring cells listed in the "inter-RAT" cell info" received in "System Information Block type 12" (or "System Information Block type 11").

The UE shall not measure on other systems except at the measurement occasions given in subclause 8.5.11.

8.4.1.6.4 Quality measurement

Upon transition from CELL_DCH to CELL_FACH state, the UE shall:

- stop quality type measurement reporting;
- retrieve each set of measurement control information of measurement type "quality" stored in the variable MEASUREMENT_IDENTITY and delete all control information associated to the measurement identity.

8.4.1.6.5 UE internal measurement

Upon transition from CELL_DCH to CELL_FACH state, the UE shall:

- stop UE internal measurement type measurement reporting;

- retrieve each set of measurement control information of measurement type "UE internal" stored in the variable MEASUREMENT_IDENTITY and delete all control information associated to the measurement identity.

8.4.1.6.6 Traffic volume measurement

Upon transition from CELL_DCH to CELL_FACH state, the UE shall take the following actions:

- retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT_IDENTITY; and
  - if the optional IE "measurement validity" for this measurement has not been included:
    - delete the measurement associated with the variable MEASUREMENT_IDENTITY.
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "CELL_DCH":
    - stop measurement reporting;
    - save the measurement associated with the variable MEASUREMENT_IDENTITY to be used after the next transition to CELL_DCH state.
- if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
  - continue measurement reporting.
- if the UE has previously stored a measurement, for which the IE "measurement validity" has been included and for which the IE "UE state" has been assigned to value "all states except CELL_DCH":
  - resume this measurement and associated reporting.
- If no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_FACH state:
  - monitor the BCH in order to receive "System Information Block type 11". Upon reception of "System Information Block Type 11":
    - read the IE "Traffic volume measurement system information" and store the measurement control information in variable MEASUREMENT_IDENTITY;
    - begin traffic volume measurement reporting according to the assigned information.
  - if the "System Information Block type 12" is transmitted in the cell, monitor the BCH in order to receive "System Information Block type 12". Upon reception of "System Information Block type 12":
    - read the IE "Traffic volume measurement system information", and update the measurement control information in variable MEASUREMENT_IDENTITY;
    - begin traffic volume measurement reporting according to the assigned information.
- if the UE in CELL_FACH state receives a MEASUREMENT CONTROL message, which indicates the same measurement identity as that stored in variable MEASUREMENT_IDENTITY:
  - update the stored information with the traffic volume measurement control information in variable MEASUREMENT_IDENTITY; and
  - refrain from updating the traffic volume measurement control information associated with this measurement identity from the BCH until the UTRAN explicitly releases this measurement with another MEASUREMENT CONTROL message.

NOTE: The UE may receive " System Information Block type 12" before " System Information Block type 11" and can store received information before receiving " System Information Block type 11". However, the UE shall not apply any information received System Information Block type 12 before having received information from " System Information Block type 11".

8.4.1.7 Measurements after transition from CELL_FACH to CELL_DCH state

The UE shall obey the follow rules for different measurement types after transiting from CELL_FACH to CELL_DCH state:

8.4.1.7.1 Intra-frequency measurement

If the UE has previously in CELL_DCH state stored an intra-frequency measurement, for which the IE "measurement validity" has been assigned the value "resume" and for which the IE "UE state for reporting" has been assigned the value "CELL_DCH", the UE shall resume this measurement and associated reporting. If the UE has performed cell reselection whilst out of CELL_DCH state, the UE shall not resume the measurement.

If the UE has no previously assigned measurement, it shall continue monitoring the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block type 12" (or "System Information Block type 11"). If the "intra-frequency measurement reporting criteria" IE was included in "System Information Block type 12" (or "System Information Block type 11"), the UE shall send the MEASUREMENT REPORT message when reporting criteria are fulfilled. When the UE receives a MEASUREMENT CONTROL message including an intra-frequency measurement type assignment, the UE shall stop monitoring and measurement reporting for the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block type 12" (or "System Information Block type 11"). If the reporting criteria is included in the MEASUREMENT CONTROL message, the UE shall replace the measurement reporting criteria received in "System Information Block type 12" (or "System Information Block type 11") with the new information received in the MEASUREMENT CONTROL message.

8.4.1.7.2 Inter-frequency measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency cell info" IE in "System Information Block type 12" (or "System Information Block type 11"). If the UE has previously stored an inter-frequency measurement, for which the IE "measurement validity" has been assigned the value "resume" and for which the IE "UE state for reporting" has been assigned the value "CELL_DCH", the UE shall resume this measurement and associated reporting.

8.4.1.7.3 Inter-RAT measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency system info" IE in "System Information Block type 12" (or "System Information Block type 11"). If the UE has previously stored an inter-RAT measurement, for which the IE "measurement validity" has been assigned the value "resume" and for which the IE "UE state for reporting" has been assigned the value "CELL_DCH", the UE shall resume this measurement and associated reporting.

8.4.1.7.4 Traffic volume measurement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall:

- retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT_IDENTITY;
  - if the optional IE "measurement validity" for this measurement has not been included:
    - delete the measurement associated with the variable MEASUREMENT_IDENTITY.
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "CELL_FACH":
    - stop measurement reporting and save the measurement associated with the variable MEASUREMENT_IDENTITY to be used after the next transition to CELL_FACH state.
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
    - continue measurement reporting.
  - if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "CELL_DCH":

  - resume this measurement and associated reporting.

- if no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_DCH state:
  - continue an ongoing traffic volume type measurement, assigned in " System Information Block type 11" (or " System Information Block type 12 if transmitted in the cell);
- If the UE in CELL_DCH state receives a MEASUREMENT CONTROL message, which indicates the same measurement identity as that stored in variable MEASUREMENT_IDENTITY:
  - update the stored information with the traffic volume measurement control information in variable MEASUREMENT_IDENTITY.

8.4.1.8 Measurements after transition from idle mode to CELL_DCH state

The UE shall obey the follow rules for different measurement types after transiting from idle mode to CELL_DCH state:

8.4.1.8.1 Intra-frequency measurement

The UE shall continue monitoring the list of neighbouring cells assigned in the "intra-frequency cell info" IE in " System Information Block type 12" (or " System Information Block type 11"). If the "intra-frequency measurement reporting criteria" IE was included in " System Information Block type 12" (or " System Information Block type 11"), the UE shall send the MEASUREMENT REPORT message when reporting criteria are fulfilled.

When the UE receives a MEASUREMENT CONTROL message including an intra-frequency measurement type assignment, the UE shall stop monitoring and measurement reporting for the list of neighbouring cells assigned in the "intra-frequency cell info" IE in " System Information Block type 12" (or " System Information Block type 11"). If the reporting criteria is included in the MEASUREMENT CONTROL message, the UE shall replace the measurement reporting criteria received in " System Information Block type 12" (or " System Information Block type 11") with the new information received in the MEASUREMENT CONTROL message.

8.4.1.8.2 Inter-frequency measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency cell info" IE in " System Information Block type 12" (or "System Information Block type 11").

8.4.1.8.3 Inter-RAT measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency system info" IE in "System Information Block type 12" (or "System Information Block type 11").

8.4.1.8.4 Traffic volume measurement

Upon transition from idle mode to CELL_DCH state, the UE shall:

- begin a traffic volume type measurement, assigned in "System Information Block type 11" (or "System Information Block type 12" if transmitted in the cell).

8.4.1.9 Measurements after transition from idle mode to CELL_FACH state

The UE shall obey the follow rules for different measurement types after transiting from idle mode to CELL_FACH state:

8.4.1.9.1 Intra-frequency measurement

The UE shall begin monitoring neighbouring cells listed in the "intra-frequency cell info" received in "System Information Block type 12" (or "System Information Block type 11").

If the UE receives "intra-frequency measurement reporting criteria", from "System Information Block type 12 " (or "System Information Block type 11"), the UE shall store this information to use after a subsequent transition to CELL_DCH state.

If the UE receives the IEs "Intra-frequency reporting quantity for RACH Reporting" and "Maximum number of Reported cells on RACH" from "System Information Block type 12" (or "System Information Block type 11"), the UE shall use this information for reporting measured results in RACH messages.

8.4.1.9.2 Inter-frequency measurement

The UE shall begin monitoring neighbouring cells listed in the "inter-frequency cell info" received in "System Information Block type 12" (or "System Information Block type 11").

The UE shall not measure on other frequencies except at the measurement occasions given in subclause 8.5.11.

8.4.1.9.3 Inter-RAT measurement

The UE shall begin monitoring neighbouring cells listed in the "inter-RAT" cell info" received in "System Information Block type 12" (or "System Information Block type 11").

The UE shall not measure on other systems except at the measurement occasions given in subclause 8.5.11.

8.4.1.9.4 Traffic volume measurement

Upon transition from idle mode to CELL_FACH state, the UE shall:

- monitor the BCH in order to receive "System Information Block type 11". Upon reception of " System Information Block type 11":
  - read the IE "Traffic volume measurement system information" and store the measurement control information in variable MEASUREMENT_IDENTITY;
  - begin traffic volume measurement reporting according to the assigned information.
- if the "System Information Block type 12" is transmitted in the cell:
  - monitor the BCH in order to receive "System Information Block type 12". Upon reception of " System Information Block type 12":
    - read the IE "Traffic volume measurement system information", and update the measurement control information in variable MEASUREMENT_IDENTITY;
  - continue traffic volume measurement reporting according to the updated information.

8.4.1.10 Measurements when measurement object is no longer valid

8.4.1.10.1 Traffic volume measurement

If UE is no longer using the transport channel that is specified in "traffic volume measurement object", UE shall ignore any measurements that are assigned to that transport channel. If none of the transport channels that are specified in "traffic volume measurement object" is being used, UE shall release that particular measurement and its measurement ID.

8.4.2 Measurement report

Figure 58: Measurement report, normal case

8.4.2.1 General

The purpose of the measurement reporting procedure is to transfer measurement results from the UE to UTRAN.

8.4.2.2 Initiation

In CELL_DCH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are met for any ongoing measurements that are being performed in the UE.

In CELL_FACH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are met for an ongoing traffic volume measurement which is being performed in the UE.

If the Radio Bearer associated with the MEASUREMENT_IDENTITY fulfilling the reporting criteria for an ongoing traffic volume measurement is mapped on transport channel of type USCH, the UE shall initiate the "PUSCH CAPACITY REQUEST" procedure instead of transmitting a MEASUREMENT REPORT (TDD Only).

In CELL_PCH or URA_PCH state, the UE shall first perform the cell update procedure according to subclause 8.3.1, using the cause "uplink data transmission", in order to transit to CELL_FACH state and then transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are fulfilled for an ongoing traffic volume measurement which is being performed in the UE.

The reporting criteria are fulfilled if either:

- the time indicated in the stored IE "Periodical reporting" has elapsed for a given measurement that was either initiated or since the last measurement report related to this measurement was transmitted; or
- an event in stored IE "Measurement reporting criteria" was triggered. Events and triggering of reports for different measurement types are described in detail in clause 14.

The UE shall transmit the MEASUREMENT REPORT message using either AM or UM RLC according to the stored IE "measurement reporting mode" associated with the measurement identity that triggered the report.

For the measurement, which triggered the MEASUREMENT REPORT message, the UE shall:

- Set the IE "measurement identity" to the measurement identity which is associated with that measurement in variable MEASUREMENT_IDENTITY.
- Set the IE "measured results" to include measurements according to the IE "reporting quantity" of that measurement stored in variable MEASUREMENT_IDENTITY.
- Set the IE "Measured results" in the IE "Additional measured results" according to the IE "reporting quantity" for all measurements associated with the measurement identities included in the IE "additional measurements" stored in variable MEASUREMENT_IDENTITY of the measurement that triggered the measurement report. If several additional measured results are to be included, the UE shall sort them in ascending order according to their IE "measurement identity" in the MEASUREMENT REPORT message.

If the MEASUREMENT REPORT message was triggered by an event (i.e. not a periodical report), the UE shall:

- Set the measurement event results according to the event that triggered the report.

8.4.3 Assistance Data Delivery

Figure 59 Assistance Data Delivery

8.4.3.1 General

The purpose of the assistance data delivery procedure is to transfer UE positioning related assistance data from the UTRAN to the UE.

8.4.3.2 Initiation

The UTRAN may deliver UP related assistance data with a ASSISTANCE DATA DELIVERY message, which is transmitted on the downlink DCCH using AM RLC if RNC is requested to do so by the CN.

8.4.3.3 Reception of ASSISTANCE DATA DELIVERY message by the UE

Upon reception of a ASSISTANCE DATA DELIVERY message the UE shall:

- if IE "UP OTDOA assistance data" is included:
  - store the OTDOA assistance data
- if IE "UP GPS assistance data" is included:
  - store the GPS assistance data

8.4.3.4 Invalid ASSISTANCE DATA DELIVERY message

If the UE receives a ASSISTANCE DATA DELIVERY message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- include the IE "Identification of received message"; and
- set the IE "Received message type" to ASSISTANCE DATA DELIVERY; and
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the ASSISTANCE DATA DELIVERY message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- when the RRC STATUS message has been submitted to lower layers for transmission:

- continue with any ongoing processes and procedures~~resume normal operation~~ as if the invalid ASSISTANCE DATA DELIVERY message has not been received.

8.5 General procedures

8.5.1 Selection of initial UE identity

The purpose of the IE "Initial UE identity" is to provide a unique UE identification at the establishment of an RRC connection. The type of identity shall be selected by the UE according to the following.

Upper layers shall set the variable SELECTED_PLMN. If the variable SELECTED_PLMN in the UE indicates "GSM-MAP", the UE shall choose "UE id type" in the IE "Initial UE identity" with the following priority:

1. TMSI (GSM-MAP): The TMSI (GSM-MAP) shall be chosen if available. The IE "LAI" in the IE "Initial UE identity" shall also be present when TMSI (GSM-MAP) is used, for making it unique.

2. P-TMSI (GSM-MAP): The P-TMSI (GSM-MAP) shall be chosen if available and no TMSI (GSM-MAP) is available. The IE "RAI" in the IE "Initial UE identity" shall in this case also be present when P-TMSI (GSM-MAP) is used, for making it unique.

3. IMSI (GSM-MAP): The IMSI (GSM-MAP) shall be chosen if available and no TMSI (GSM-MAP) or P-TMSI is available.

4. IMEI: The IMEI shall be chosen when none of the above three conditions are fulfilled.

When being used, the IEs "TMSI (GSM-MAP)," "P-TMSI (GSM-MAP)", "IMSI (GSM-MAP)", "LAI" and "RAI" shall be set equal to the values of the corresponding identities stored in the USIM or SIM.

If the variable SELECTED_PLMN in the UE indicates "ANSI-41", the UE shall choose "UE id type" in the IE "Initial UE identity" according to the procedure specified in the 3GPP2 document "3GPP2 C.P0004-A".

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 3GPP TS 25.304.

While camping on a cell, the UE shall acquire system information according to the system information procedure in subclause 8.1, perform measurements according to the measurement control procedure specified in subclause 8.4 and, if registered, be prepared to receive paging messages according to the paging procedure in subclause 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 subclause 8.6.1.2.

When entering idle mode the current START value for every CN domain ~~is~~ shall be stored in the USIM.

8.5.3 Open loop power control upon establishment of DPCCH

This procedure is used in FDD mode only.

When establishing the first DPCCH the UE shall start the UL inner loop power control at a power level according to:

- DPCCH_Initial_power = DPCCH_Power_offset – CPICH_RSCP

Where

DPCCH_Power_offset shall have the value of IE "DPCCH Power offset" in IE "Uplink DPCH power control info

The value for the CPICH_RSCP shall be measured by the UE.

8.5.4 Physical channel establishment criteria

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 successive "in sync" indications. On receiving N312 successive "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

8.5.5 Actions in "out of service area" and "in service area"

This subclause specifies the general actions the UE shall perform when it detects "out of service" or "in service" area. The specific UE behaviour when it detects "out of service" or "in service area" and periodical ~~cell update or periodical URA~~ update has been configured by T305 in the IE “UE Timers and constants in connected mode” set to any other value than “infinity” is specified in subclause 8.3.1.

8.5.5.1 Detection of "out of service" area

When a suitable cell is not found based on the description in ~~subclause 5.2.2.1 of 3GPP TS 25.304~~[4], the UE considers it as having detected "out of service area".

8.5.5.1.1 Actions following detection of "out of service" area in URA_PCH or CELL_PCH state

If the UE detects the "out of service area" and the UE is in URA_PCH or CELL_PCH state it shall perform the following actions:

start timer T316;

perform processes described in subclause 7.2.2.

8.5.5.1.2 Actions following detection of "out of service" area in CELL_FACH state

If the UE detects the "out of service area" and the UE is in CELL_FACH state it shall perform the following actions:

- start timer T317 if not already running;
- perform processes described in subclause 7.2.2.

8.5.5.2 Detection of "in service" area

When a suitable cell is found based on the description in 3GPP TS 25.304, the UE considers it as having detected "in service area".

8.5.5.2.1 Actions following Re-entry into "in service area" in URA_PCH or CELL_PCH state

If the UE re-enters "in service area" before T316 expiry the UE shall perform the following actions:

- stop T316;
- perform processes described in subclause 7.2.2.

8.5.5.2.2 Actions following re-entry into "in service area" in CELL_FACH state

If the UE detects "in service area" before T317 expiry the UE shall perform the following actions:

stop T317;

initiate the cell update procedure using as cause "Re-entering service area" as specified in subclause 8.3.1.;

perform processes described in subclause 7.2.2.

8.5.5.3 T316 expiry

On T316 expiry the UE shall perform the following actions:

start timer T317;

initiate the cell update procedure using as cause "Re-entering service area" as specified in subclause 8.3.1.

8.5.5.4 T317 expiry

When the T317 expires, the UE shall:

- move to idle mode;
- release all dedicated resources;
- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- ~~indicate an RRC connection failure to the non-access stratum,~~
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- perform actions specified in subclause 8.5.2 when entering idle mode from connected mode.

8.5.6 Radio link failure criteria

In CELL_DCH State the UE shall start timer T313 after receiving N313 consecutive "out of sync" indications for the established DPCCH physical channel from layer 1. The UE shall stop and reset timer T313 upon receiving N315 successive "in sync" indications from layer 1 and upon change of UE state. If T313 expires, the UE shall consider it as a "Radio link failure". When a radio link failure occurs the UE shall clear the dedicated physical channel configuration and perform actions specified elsewhere.

8.5.7 Open loop power control

For FDD and prior to PRACH or PCPCH transmission the UE shall:

- read the IEs "Primary CPICH DL TX power", "UL interference" and "Constant value" in System Information Block type 6 (or System Information Block type 5, if system information block type 6 is not being broadcast) and System Information Block type 7.
- measure the value for the CPICH_RSCP
- calculate the power for the first preamble as:

  Preamble_Initial_Power = Primary CPICH DL TX power – CPICH_RSCP + UL interference + Constant Value

  Where,

  Primary CPICH DL TX power shall have the value of IE "Primary CPICH DL TX power",

  UL interference shall have the value of IE "UL interference"; and

  Constant Value shall have the value of IE "Constant Value".

- as long as the physical layer is configured for PRACH or PCPCH transmission, continuously recalculate the Preamble_Initial_Power when any of the broadcast parameters used in the above formula changes and resubmit to the physical layer the new calculated Preamble_Initial_Power.

For TDD the UE shall:

- if in the IE "Uplink DPCH Power Control" the "CHOICE UL OL PC info" has the value "Broadcast UL OL PC info":
  - acquire Reference Power, Constant Values from System Information Block type 5 and System Information Block type 6, and I_{BTS} for all active UL timeslots from System Information Block type 14 on the BCH;
- otherwise:
  - acquire Reference Power, Constant Values and I_{BTS} for all active UL timeslots from the IE "Uplink DPCH Power Control".
- for PUSCH and PRACH power control acquire Reference Power, Constant Values and I_{BTS} for all active UL timeslots from System Information Block type 5 , System Information Block type and System Information Block type 14 on the BCH,

  calculate the UL transmit power according to the following formula for the PRACH continuously while the physical channel is active:

  - $P_{PRACH} = L_{PCCPCH} + I_{BTS} +$ RACH Constant value,
  - 3dB shall be added to RACH Constant Value in the above equation for the case where RACH Spreading Factor = 8
- calculate the UL transmit power according to the following formula for the DPCH continuously while the physical channel is active:

  $P_{DPCH} = \alpha L_{PCCPCH}+(1-\alpha)L_0 + I_{BTS} + SIR_{TARGET}+$ DPCH Constant value
- calculate the UL transmit power according to the following formula for the PUSCH continuously while the physical channel is active:

  $P_{USCH} = \alpha L_{PCCPCH}+(1-\alpha)L_0 + I_{BTS} + SIR_{TARGET}+$ USCH Constant value

Where, for all the above equations for TDD the following apply:

- $P_{PRACH,}$ P_{DPCH}, & P_{USCH}: Transmitter power level in dBm,
- L_{PCCPCH}: Measurement representing path loss in dB (reference transmit power "Primary CCPCH Tx Power" is broadcast on BCH in System Information Block type 5 and System Information Block type 6, or individually signalled to each UE in the IE" Uplink DPCH Power Control").
- L_0: Long term average of path loss in dB
- I_{BTS}: Interference signal power level at cell's receiver in dBm ("UL Interference" is broadcast on BCH in System Information Block type 14 or individually signalled to each UE in the IE "Uplink DPCH Power Control" for each active uplink timeslot).
- α: α is a weighting parameter, which represents the quality of path loss measurements. α may be a function of the time delay between the uplink time slot and the most recent down link PCCPCH time slot. α is calculated at the UE.
- SIR_{TARGET}: Target SNR in dB. This value is individually signalled to UEs in IEs "UL DPCH Power Control Info" and "PUSCH Power Control Info".
- RACH Constant value: This value is broadcast on BCH and shall be read on System Information Block type 5 and System Information Block type 6.
- DPCH Constant value: This value is broadcast on BCH and shall be read on System Information Block type 5 and System Information Block type 6, or individually signalled to each UE in the IE "Uplink DPCH Power Control".
- USCH Constant Value: This value is broadcast on BCH and shall be read on System Information Block type 5 and System Information Block type 6.

8.5.8 Hyper Frame Numbers

The hyper frame numbers (HFN) are used as MSBs of both the ciphering sequence number (COUNT-C) and the integrity sequence number (COUNT-I) for the ciphering and integrity protection algorithms, respectively. For non-transparent mode radio bearers there is an uplink and downlink COUNT-C per radio bearer and an uplink and downlink COUNT-I per signalling radio bearer. For all transparent mode radio bearers there is an uplink and a downlink COUNT-C and an uplink and a downlink COUNT-I. COUNT-C and COUNT-I are defined in 3GPP TS 33.102.

The following hyper frame numbers are defined:

MAC-d HFN	24 bits	MSB of COUNT-C for data sent over RLC TM
RLC UM HFN	25 bits	MSB of COUNT-C for data sent over RLC UM
RLC AM HFN	20 bits	MSB of COUNT-C for data sent over RLC AM
RRC HFN	28 bits	MSB of COUNT-I

The START value is used to initialise the 20 most significant bits of all the hyper frame numbers and the remaining bits of the hyper frame numbers are set equal to zero.

8.5.9 START

In connected mode, the START value for CN domain 'X' is calculated as

$START_X = MSB_{20}$ (MAX {COUNT-C, COUNT-I | all logical channels protected with CK_X and IK_X}) + 1.

The $START_X$ value is used to initialise the 20 most significant bits of all hyper frame numbers in CN domain 'X'.

When entering idle mode the current START value for every CN domain is stored in the USIM.

8.5.10 Integrity protection

Integrity protection shall be performed on all RRC messages, with the following exceptions:

HANDOVER TO UTRAN COMPLETE

PAGING TYPE 1

PUSCH CAPACITY REQUEST

PHYSICAL SHARED CHANNEL ALLOCATION

RRC CONNECTION REQUEST

RRC CONNECTION SETUP

RRC CONNECTION SETUP COMPLETE

RRC CONNECTION REJECT

RRC CONNECTION RELEASE (CCCH only)

SYSTEM INFORMATION

SYSTEM INFORMATION CHANGE INDICATION

TRANSPORT FORMAT COMBINATION CONTROL

NOTE: MEASUREMENT REPORT needs to be studied when used on UM as in some cases there could be synchronization problems with the RRC SN.

For each signalling radio bearer, the UE shall use two RRC hyper frame numbers,

- "Uplink RRC HFN";

- "Downlink RRC HFN".

and two message sequence numbers,

- "Uplink RRC Message sequence number";
- "Downlink RRC Message sequence number".

The above information is stored in the variable INTEGRITY_PROTECTION_INFO per signalling radio bearer (RB 0-4).

Upon the first activation of integrity protection for an RRC connection, UE and UTRAN initialise the "Uplink RRC Message sequence number" and "Downlink RRC Message sequence number" for all signalling radio bearers to zero. The UE and UTRAN apply the sequence numbers for the RRC message activating integrity protection thereafter for all subsequent messages when integrity protection is activated. The RRC message sequence number (RRC SN) is incremented for every integrity protected RRC message. If the same RRC message is sent repeatedly (e.g. RRC CONNECTION RELEASE, RRC CONNECTION RELEASE COMPLETE) the corresponding RRC SN is not incremented.

8.5.10.1 Integrity protection in downlink

If the UE receives an RRC message on signalling radio bearer with RB identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is present the UE shall:

- check the value of the IE "RRC message sequence number" included in the IE "Integrity check info". If the RRC message sequence number is lower than the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO, the UE shall increment "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with one. If the RRC message sequence number is equal to the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO, the message shall be discarded.
- calculate an expected message authentication code in accordance with subclause 8.5.10.3.
- compare the expected message authentication code with the value of the received IE "message authentication code" contained in the IE 'Integrity check info'.
  - If the expected message authentication code and the received message authentication code are the same, the integrity check is successful.
  - If the calculated expected message authentication code and the received message authentication code differ:
    - if the IE "RRC message sequence number" included in the IE "Integrity check info" is lower than the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO (in this case the "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO was incremented by one, as stated above):
      - decrement "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO by one.
      - discard the message.

If the UE receives an RRC message on signalling radio bearer with identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is not present the UE shall discard the message.

8.5.10.2 Integrity protection in uplink

Upon transmitting an RRC message using the signalling radio bearer with radio bearer identity n, and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" the UE shall:

- increment "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO with 1. When "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO becomes 0, the UE shall increment "Uplink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with 1

- calculate the message authentication code in accordance with subclause 8.5.11.3
- replace the "Message authentication code" in the IE "Integrity check info" in the message with the calculated message authentication code.
- replace the "RRC Message sequence number" in the IE "Integrity check info" in the message with contents set to the new value of the "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO

8.5.10.3 Calculation of message authentication code

The UE shall calculate the message authentication code in accordance with 3GPP TS 33.102. The input parameter MESSAGE (3GPP TS 33.102) for the integrity algorithm shall be constructed by:

- setting the "Message authentication code" in the IE "Integrity check info" in the message to the signalling radio bearer identity
- setting the "RRC Message sequence number" in the IE "Integrity check info" in the message to zero
- encoding the message
- appending RRC padding (if any) as a bitstring to the encoded bitstring as the least significant bits

8.5.11 FACH measurement occasion calculation

When in CELL_FACH state and when the variable C_RNTI is non-empty the UE shall perform inter-frequency and inter system measurements during the frame(s) with the SFN value fulfilling the following equation:

SFN div N = C_RNTI mod M_REP + n * M_REP

where

- N is the TTI (in number of 10ms frames) of the FACH having the largest TTI on the SCCPCH monitored by UE
- C_RNTI is the C-RNTI value of the UE stored in the variable C_RNTI
- M_REP is the Measurement Occasion cycle length. According to the equation above, a FACH Measurement Occasion of N frames will be repeated every N * M_REP frame, and M_REP = 2^k.

  where,

  - k is the FACH Measurement occasion cycle length coefficient.
    The value of the FACH Measurement occasion cycle length coefficient is read in system information in "System Information Block type 11" or "System Information Block type 12" in the IE "FACH measurement occasion info".
- n = 0,1,2… as long as SFN is below its maximum value

The UE is allowed to measure on other occasions in case the UE moves "out of service" area or in case it can simultaneously perform the ordered measurements.

8.5.12 Establishment of Access Service Classes

The PRACH resources (i.e. access slots and preamble signatures for FDD), timeslot (with specific frame allocation and channelisation code for TDD) may be divided between different Access Service Classes in order to provide different priorities of RACH usage. It is possible for more than one ASC or for all ASCs to be assigned to the same access slot/signature space in FDD or frame allocation in TDD.

Access Service Classes shall be numbered in the range $0 \le i \le$ NumASC ≤ 7 (i.e. the maximum number of ASCs is "NumASC+1" = 8). An ASC is defined by an identifier, i, that defines a certain partition of the PRACH resources and an associated persistence value P_i. A set of ASC parameters consists of "NumASC+1" such parameters (i, P_i), i = 0, …, NumASC.

PRACH partitions shall be established using the information element "PRACH partition". The persistence values P_i to be associated with each ASC shall be derived from the dynamic persistence level N = 1,…, 8 which is broadcast in SIB 7, and the persistence scaling factors s_i, broadcast in System Information Block Type 5 and possibly also in System Information Block Type 6, as follows:

$P(N) = 2^{-(N-1)}$

ASC # *i*	0	1	2	3	4	5	6	7
P_i	1	P(N)	s_2 P(N)	s_3 P(N)	s_4 P(N)	s_5 P(N)	s_6P(N)	s_7 P(N)

Scaling factors s_i are provided optionally for i = 2,…, NumASC, where NumASC+1 is the number of ASCs as defined by PRACH partitioning. If no scaling factors are broadcast, default value 1 shall be used if NumASC ≥ 2.

If $k \geq 1$ scaling factors are broadcast and NumASC ≥ k+2 then the last scaling factor s_{k+1} shall be used as default for the ASCs where $i > k + 1$.

The set of ASC parameters is provided to MAC with the CMAC-Config-REQ primitive (see TS 25.321), the PRACH partitioning is provided to PHY using the CPHY-TrCH-Config-REQ primitive (see TS 25.302).

The ASC enumeration shall be such that it corresponds to the order of priority (ASC 0 = highest priority, ASC 7 = lowest priority). ASC 0 shall be used in case of Emergency Call or for reasons with equivalent priority.

At radio bearer setup/reconfiguration each involved logical channel is assigned a MAC Logical channel Priority (MLP) in the range 1,…,8. When the MAC sublayer is configured for RACH transmission in the UE, these MLP levels shall be employed for ASC selection on MAC.

8.5.13 Mapping of Access Classes to Access Service Classes

Access Classes shall only be applied at initial access, i.e. when sending an RRC CONNECTION REQUEST message. A mapping between Access Class (AC) and Access Service Class (ASC) shall be indicated by the information element "AC-to-ASC mapping" in System Information Block type 5. The correspondence between AC and ASC shall be indicated as follows.

AC	0 - 9	10	11	12	13	14	15
ASC	1^{st} IE	2^{nd} IE	3^{rd} IE	4^{th} IE	5^{th} IE	6^{th} IE	7^{th} IE

In the table, "n^{th} IE" designates an ASC number i in the range 0 - 7 to AC.

For the random access, the parameters implied by the respective ASC shall be employed. In case the UE is member of several ACs it shall select the ASC for the highest AC number. In connected mode, AC shall not be applied.

8.5.14 PLMN Type Selection

The UE shall perform PLMN selection and reselection as stated in 3GPP TS 25.304 and store the identifier of the chosen PLMN in the variable SELECTED_PLMN as follows:

- If a GSM-MAP type of PLMN is selected, the UE shall set the "PLMN Type" in the variable SELECTED_PLMN to "GSM-MAP" and store the PLMN identity of that PLMN.
- If an ANSI-41 type of PLMN is selected, the UE shall set the "PLMN Type" in the variable SELECTED_PLMN to "ANSI-41" and store the System identification (SID) of that PLMN.

8.5.15 CFN calculation

8.5.15.1 Initialisation in CELL_DCH state on transiting from CELL_FACH state

When the UE changes from CELL_FACH state to CELL_DCH state CFN shall be calculated according to the following formula:

- for FDD:

CFN = ((SFN*38400 - DOFF*512) div 38400) mod 256

- for TDD:

  CFN = (SFN - DOFF) mod 256

8.5.15.2 Initialisation in CELL_DCH state at hard handover

When the UE is in CELL_DCH state and receives any of the messages causing the UE to perform a hard handover, the UE shall check the IE "Timing indication" in that message and:

- if IE "Timing indication" has the value "initialise" (i.e. timing re-initialised hard handover):
  - if IE "CFN-targetSFN frame offset is not included:
    - read SFN on target cell and the CFN shall be calculated according to the following formula:
      - for FDD:
        - CFN = ((SFN*38400 - DOFF*512) div 38400) mod 256;
      - for TDD:
        - CFN = (SFN - DOFF) mod 256;
  - if IE "CFN-targetSFN frame offset" is included in the message causing the UE to perform a timing re-initialised hard handover, CFN shall be calculated according to the following formula:
    - for FDD:
      - CFNnew = (CFNold*38400+COFF*38400 -DOFF*512) div 38400) mod 256
    - for TDD:
      - CFNnew = (CFNold+COFF - DOFF) mod 256
        - where COFF is the value of "CFN-targetSFN frame offset".

NOTE: CFN-targetSFN frame offset = (TargetSFN-CFN)mod256

- if IE "Timing indication" has the value "maintain" (i.e. timing-maintained hard handover), the UE shall keep CFN with no change due to the hard handover, and only increase CFN (mod 256) by 1 every frame.

8.5.15.3 Initialisation for CELL_FACH

When the UE performs cell selection, re-selection or changes to CELL_FACH state the UE shall set CFN for all common or shared channels according to:

- CFN = SFN mod 256

After the initialisation, the CFN in the UE is increased (mod 256) by 1 every frame.

8.5.15.4 Initialisation after intersystem handover to UTRAN

Initialisation for CELL_DCH state after intersystem handover:

- read SFN on target cell and the CFN shall be calculated according to the following formula:

- for FDD:

  CFN = ((SFN*38400 - DOFF*512) div 38400) mod 256

- for TDD:

  CFN = (SFN - DOFF) mod 256

8.6 Generic actions on receipt and absence of an information element

8.6.1 CN information elements

8.6.1.1 CN domain specific DRX cycle length coefficient

The UE updates CN domain specific DRX cycle length coefficient as specified in [4]. The UE shall use it to calculate the CN domain specific DRX cycle length, according to the following:

- set k to the value of the IE "CN domain specific DRX cycle length coefficient".
- store the result of 2^k *PBP, where PBP is the Paging Block Periodicity, as the CN domain specific DRX cycle length for the CN domain indicated by the IE "CN domain identity". For FDD PBP=1.

The UE shall determine its idle mode paging occasions and PICH monitoring occasions for that CN domain, according to 3GPP TS 25.304, based on the stored CN domain specific DRX cycle length, when using DRX in idle mode.

8.6.1.2 CN information info

If the IE "CN information info" is present in a message, the UE shall:

- if present, forward the content of the IE "PLMN identity" to upper layers~~ entities of all CN domains~~;
- if present, forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers~~ entities of all CN domains~~;
- if the IE "CN domain related information" is present:~~, forward the content of the IE "CN domain specific GSM-MAP NAS system info" to the non-access stratum entity of the UE indicated by the IE "CN domain identity"~~.
  - forward each occurrence of the IE "CN domain specific GSM-MAP NAS system info" together with the IE "CN domain identity" to upper layers;
  - if an IE “CN domain specific GSM-MAP NAS system info” is not present for a particular CN domain:
    - indicate to upper layers that no CN system information is available for that CN domain;

8.6.1.3 Signalling connection release indication

If the IE "Signalling Connection release indication" is present in a message, the UE shall ~~release all the radio bearers belonging to the indicated domain, and simultaneously,~~

- if all radio access bearers for the CN domain identified with the value of the IE "Signalling Connection release indication" would have been released in the variable ESTABLISHED_RABS after processing of the received message:
  - indicate release of the signalling connection identified with the value of the IE "Signalling Connection release indication" to the upper layers~~ entity of the indicated domain~~.
  - remove the signalling connection identified with the value of the IE “Signalling Connection release indication” from the variable ESTABLISHED_SIGNALLING_CONNECTIONS
- if radio access bearers for the CN domain identified with the value of the IE "Signalling Connection release indication" would remain in the variable ESTABLISHED_RABS after processing of the received message:
  - set the variable INVALID_CONFIGURATION to TRUE.

8.6.2 UTRAN mobility information elements

8.6.2.1 URA identity

The UE shall:

- if the IE "URA identity" is included in a received message:
  - if the IE "RRC State Indicator" is included and set to "URA_PCH":
    - store this URA identity in the variable URA_IDENTITY;
    - after sending a possible message to UTRAN and entering URA_PCH state as specified elsewhere, read system information block type 2 in the selected cell;
    - if the stored URA identity in the variable URA_IDENTITY is not included in the list of URA identities in System Information Block type 2 in the selected cell, the list of URA identities in system information block type 2 is empty or if the system information block type 2 can not be found, a confirmation error of URA identity list has occurred:
      - if no URA update procedure is ongoing:
        - initiate a URA update procedure after entering URA_PCH state; see subclause 8.3.1.2.
      - if a URA update procedure is ongoing:
        - take actions as specified in subclause 8.3.1.10.
- if the IE "URA identity" is not included in a received message:
  - the IE "RRC State Indicator" is included and set to " URA_PCH":
    - after sending a possible message to UTRAN and entering URA_PCH state as specified elsewhere, read System Information Block type 2 in the selected cell;
    - if System Information Block type 2 in the selected cell contains a single URA identity:
      - store this URA identity in the variable URA_IDENTITY;
      - if System Information Block type 2 of the selected cell contains more than one URA identity, the list of of URA identities in system information block type 2 is empty or if the system information block type 2 can not be found, a confirmation error of URA identity list has occurred:
        - if no URA update procedure is ongoing:
          - initiate a URA update procedure after entering URA_PCH state, see subclause 8.3.1.2.
        - if a URA update procedure is ongoing:
          - take actions as specified in subclause 8.3.1.10.

8.6.3 UE information elements [Note to Hans: Paragraph type changed to Heading 3]

8.6.3.1 Activation time

If the IE "Activation time" is present, the UE shall:

- start using the new configuration present in the same message as this IE at the indicated time;
- if the activation time is not at the TTI boundary of one or more of the affected transport formats:
  - start using the new configuration at the next TTI boundary common to all the affected transport formats.

NOTE: The new configuration is typically a dedicated physical channel present in the same message as the IE "Activation time". The Activation time corresponds to a CFN related to the old configuration.

8.6.3.2 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 *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 3GPP TS 25.304.

The DRX cycle length to use in connected mode is the shorter of the following two parameters:

- 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 exists to that CN domain.

8.6.3.3 Generic state transition rules depending on received information elements

The IE "RRC State Indicator" indicates the state the UE shall enter. The UE shall, if the IE "RRC State Indicator" in the received message has the value:

- "CELL_FACH":
  - enter CELL_FACH state as dictated by the procedure governing the message received.
- "CELL_DCH":
  - if neither DPCH is assigned in the message nor is the UE is CELL_DCH
    - set the variable INVALID_CONFIGURATION to TRUE;
  - else
    - enter CELL_DCH state as dictated by the procedure governing the message received.
- "CELL_PCH":
  - if the received message is RRC CONNECTION SETUP and IE "RRC State Indicator" is set to CELL_PCH
    - ~~transmit a new RRC CONNECTION SETUP REQUEST message as per subclause 8.1.3.8~~set the variable INVALID_CONFIGURATION to TRUE.
  - else
    - enter CELL_PCH state as dictated by the procedure governing the message received.
- "URA_PCH":
  - if the received message is RRC CONNECTION SETUP and IE "RRC State Indicator" is set to URA_PCH
    - set the variable INVALID_CONFIGURATION to TRUE~~transmit a new RRC CONNECTION SETUP REQUEST message as per subclause 8.1.3.8~~.
  - else
    - enter URA_PCH state as dictated by the procedure governing the message received.

8.6.3.4 Ciphering mode info

The IE "Ciphering mode info" defines the new ciphering configuration. If the IE "Ciphering mode info" is present and if the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to FALSE, the UE shall check the IE "Ciphering mode command" as part of the IE "Ciphering mode info", and perform the following:

- if the IE "Status" in the variable CIPHERING_STATUS has the value "Not Started", and if the IE "Ciphering mode command" has the value "stop", the UE shall:
  - ignore this attempt to change the ciphering configuration and set the variable INVALID_CONFIGURATION to TRUE.
- Else [Note to Hans : type of following paragraphs in blue have been to change to B x+1]
  - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to TRUE;
  - if IE "Ciphering mode command" has the value "start/restart", the UE shall:
    - start or restart ciphering in lower layers for all established radio bearers in the variable ESTABLISHED_RABS, using the ciphering algorithm (UEA [3GPP TS 33.102]) indicated by the IE "Ciphering algorithm" as part of the new ciphering configuration. For each radio bearer, the value of the IE "RB identity" in the variable ESTABLISHED_RABS minus one shall be used as the value of BEARER in the ciphering algorithm The new ciphering configuration shall be applied as specified below.
    - set the IE "Status" in the variable CIPHERING_STATUS to "Started".
  - if the IE "Ciphering mode command" has the value "stop", the UE shall
    - stop ciphering. The new ciphering configuration shall be applied as specified below
    - set the IE "Status" in the variable CIPHERING_STATUS to "Not started".
  - in case the IE "Ciphering mode command" has the value "start/restart" or "stop", the new ciphering configuration shall be applied as follows:
    - if the IE "Ciphering activation time for DPCH" is present in the IE "Ciphering mode info", the UE shall apply the new configuration at that time for radio bearers using RLC-TM. If the IE "Ciphering mode info" is present in a message reconfiguring RB, transport channel or physical channel, the indicated time in IE "Activation time for DPCH" corresponds to a CFN after that reconfiguration.
    - if the IE "Radio bearer downlink ciphering activation time info" is present in the IE "Ciphering mode info", the UE shall apply the following procedure for each radio bearer using RLC-AM and RLC-UM indicated by the IE "RB identity":
      - suspend data transmission on the radio bearer
      - store the "RLC send sequence number" for that radio bearer in the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, at which time the new ciphering configuration shall be applied.
      - when the data transmission of that radio bearer is resumed, the UE shall switch to the new ciphering configuration according to the following:
        - use the old ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number smaller than the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN.
        - use the new ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number greater than or equal to the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN
        - for a radio bearer using RLC-AM, when the RLC sequence number indicated in the IE "Radio bearer downlink ciphering activation time info" is not included in the RLC transmission window, the UE may release the old ciphering configuration for that radio bearer.

- if an RLC reset or re-establishment occurs before the activation time for the new ciphering configuration has been reached, ignore the activation time and apply the new ciphering configuration immediately after the RLC reset or RLC re-establishment.

If the IE "Ciphering mode info" is present and if the IE “Reconfiguration” in the variable CIPHERING_STATUS is set to TRUE, the UE shall ignore this second attempt to change the ciphering configuration and set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to TRUE.

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

8.6.3.5 Integrity protection mode info

The IE "Integrity protection mode info" defines the new integrity protection configuration. If the IE "Integrity protection mode info" is present and if the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_STATUS is set to FALSE, the UE shall check the IE "Integrity protection mode command" as part of the IE "Integrity protection mode info", and perform the following:

- if the IE “Integrity protection mode command” has the value “start” and the IE “Status” in the variable INTEGRITY_PROTECTION_INFO has the value “Started”; or if the IE “Integrity protection mode command” has the value “Modify” and the IE “Status” in the variable INTEGRITY_PROTECTION_INFO has the value “Not Started”, the UE shall:
  - ignore this attempt to change the integrity protection configuration, and set the variable INVALID_CONFIGURATION to TRUE
- else [Note to Hans: type of following paragraphs in blue has been change to B x+1]
  - set the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_STATUS to TRUE;
    - if IE "Integrity protection mode command" has the value "start" and the IE "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Not started", the UE shall:
      - if the IE "Historical status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Never been active":
        - initialise the "Uplink RRC Message sequence number" and "Downlink RRC Message sequence number" for all signalling radio bearers to zero;
        - set the IE "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to the value "Has been active";
      - set the IE "Status" in the variable INTEGRITY_ PROTECTION_INFO to the value "Started";
      - perform integrity protection on the received message as described in subclause 8.5.10.1;
      - use the algorithm (UIA [3GPP TS 33.102]) indicated by the IE "Integrity protection algorithm" contained in the IE "Integrity protection mode info";
      - use the IE "Integrity protection initialisation number", contained in the IE "Integrity protection mode info" as the value of FRESH [3GPP TS 33.102].
    - if IE "Integrity protection mode command" has the value "modif~~yied~~" and the IE "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started", the UE shall:
    - use the new integrity protection configuration in the downlink at the RRC sequence number indicated by the IE "Downlink integrity protection activation info", included in the IE "Integrity protection mode info";
    - perform integrity protection on the received message as described in subclause 8.5.10.1;
    - if present, use the algorithm indicated by the IE "Integrity protection algorithm" (UIA [TS 33.102]);
    - set the values of the IE "Uplink integrity protection activation info";

If the IE "Integrity protection mode info" is present and if the IE “Reconfiguration” in the variable INTEGRITY_PROTECTION_STATUS is set to TRUE, the UE shall ignore this second attempt to change the integrity protection configuration and set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to TRUE.

If the IE "Integrity protection mode info" is not present, the UE shall not change the integrity protection configuration.

8.6.3.6 Configuration of CTCH occasions

The CTCH, carrying CBS data is mapped onto only one S-CCPCH. If more than one CTCH is defined, the first CTCH that is configured in the list of S-CCPCHs is the one that is used for CBS data.

The CTCH occasions are identified by the first radio frame of the TTI which can contain CTCH data. The CTCH occasions are fixed on the system frame number cycle 0 .. 4095 (i.e. no modulo calculation) and thus repeated cyclically.

The CTCH occasions are determined by a set of parameters.

M_{TTI}:number of radio frames within the TTI of the FACH used for CTCH

N: period of CTCH allocation on S-CCPCH, integer number of radio frames,
$M_{TTI} \le N \le MaxSFN – K$, where N is a multiple of M_{TTI} (see 3GPP TS 25.212 and 3GPP TS 25.222).

MaxSFN: maximum system frame number = 4095 (see 3GPP TS 25.402).

K: CBS frame offset, integer number of radio frames $0 \le K \le N-1$ where K is a multiple of M_{TTI} .

The CTCH occasions are calculated as follows:

SFN = (K + m N), m = 0, 1,..., M, with M chosen that $K+MN \le MaxSFN$.

The parameters N and K are broadcast as system information.

8.6.3.7 UL Timing Advance

If the IE "UL Timing Advance Control" is present, the UE shall:

- if IE "Uplink Timing Advance Control" has the value "disabled":
  - reset timing advance to 0;
  - disable calculated timing advance following handover;
  - in case of handover start uplink transmissions in the target cell without applying timing advance;
- if IE "Uplink Timing Advance Control" has the value "enabled":
  - evaluate and apply the timing advance value for uplink transmission as indicated in IE "Uplink Timing Advance" at the CFN indicated in the IE "Activation Time";
  - enable UE autonomous timing advance calculation for handover;
  - update uplink timing advance as indicated in IE "Uplink Timing Advance" in advance of the UE autonomous timing advance calculation

8.6.3.8 Integrity check info

If the IE "Integrity check info" is present the UE shall act as described in subclause 8.5.10.1.

8.6.3.9 New C-RNTI

If the IE "New C-RNTI" is included, the UE shall:

- store the value in the variable C_RNTI, replacing any old stored value;
- use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

8.6.3.10 New U-RNTI

If the IE "New U-RNTI" is included in a received message, the UE shall:

- store the value in the variable U_RNTI, replacing any old stored value.

8.6.3.11 RRC transaction identifier

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below:

If the received message is any of the messages:

- RADIO BEARER SETUP; or
- RADIO BEARER RECONFIGURATION; or
- RADIO BEARER RELEASE; or
- TRANSPORT CHANNEL RECONFIGURATION; or
- PHYSICAL CHANNEL RECONFIGURATION

the UE shall:

- if the variable ORDERED_RECONFIGURATION is set to FALSE; and
- if the variable CELL_UPDATE_STARTED is set to FALSE; and
- if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
    - accept the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
- else if the variable ORDERED_RECONFIGURATION is set to TRUE; or
- if the variable CELL_UPDATE_STARTED is set to TRUE; or
- if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
    - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
        - ignore the transaction; and
        - continue with any ongoing processes and procedures~~resume normal operation~~ as the message was not received and end the procedure;
    - else:
        - reject the transaction; and
        - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
            - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else if the received message is any of the messages:

- RRC CONNECTION SETUP; or
- CELL UPDATE CONFIRM; or
- URA UPDATE CONFIRM

the UE shall:

- if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
    - accept the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
  - else if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
    - reject the transaction; and
    - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.
- else if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - continue with any ongoing processes and procedures~~resume normal operation~~ as the message was not received and end the procedure;
  - else if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
      - ignore the once accepted transaction and instead accept the new transaction; and
      - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS, replacing the previous entry;
    - else if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
      - reject the transaction; and
      - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
        - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else if the received message is any other message, the UE shall:

- if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
    - accept the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
  - else if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
    - reject the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.
- else if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored in any entry for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - continue with any ongoing processes and procedures~~resume normal operation~~ as the message was not received and end the procedure;
  - else if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored in all entries for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
      - accept the additional transaction; and
      - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS, in addition to the already existing entries;
    - else if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
      - reject the transaction; and
      - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

- ~~if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS; and~~
- ~~if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:~~
  - ~~accept the transaction; and~~
  - ~~store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;~~
- ~~else~~
  - ~~if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS; or~~

- ~~if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:~~
  - ~~if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:~~
    - ~~ignore the transaction; and~~
    - ~~resume normal operation as the message was not received and end the procedure;~~
  - ~~else:~~
    - ~~if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:~~
      - ~~reject the transaction; and~~
      - ~~if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:~~
      - ~~store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.~~

8.6.4 Radio bearer information elements

8.6.4.1 Signalling RB information to setup list

If the IE "Signalling RB information to setup list" is included the UE shall:

for each occurrence of the IE "Signalling RB information to setup":

- use the value of the IE "RB identity" as the identity of the signalling radio bearer to setup;
- perform the actions for the IE "RLC info" as specified in subclause 8.6.4.9, applied for that signalling radio bearer;
- perform the actions for the IE "RB mapping info" as specified in subclause 8.6.4.8, applied for that signalling radio bearer.

- apply a default value of the IE "RB identity" equal to 1 for the first IE "Signalling RB information to setup"; and
- increase the default value by 1 for each occurrence.

8.6.4.2 RAB information for setup

If the IE "RAB information for setup" is included, the procedure is used to establish radio bearers belonging to a radio access bearer, and the UE shall:

- if the radio access bearer identified with the IE "RAB info" does not exist in the variable ESTABLISHED_RABS:
  - create a new entry for the radio access bearer in the variable ESTABLISHED_RABS;
  - store the content of the IE "RAB info" in the entry for the radio access bearer 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 radio bearer in the IE "RB information to setup":
  - if the radio bearer identified with the IE “RB identity” does not exist in the variable ESTABLISHED_RABS for another radio access bearer than the one identified with the IE "RAB info":

    - perform the actions specified in subclause 8.6.4.3;[Note to Hans: Indentation changed to B3]
    - store information about the new radio bearer in the entry for the radio access bearer identified by "RAB info" in the variable ESTABLISHED_RABS;
  - if the radio bearer identified with the IE “RB identity” does not exist in the variable ESTABLISHED_RABS for the radio access bearer identified with the IE "RAB info":
    - create a new RAB subflow for the radio access bearer; [Note to Hans: Indentation changed to B3]
    - number the RAB subflow in ascending order, assigning the smallest number to the RAB subflow corresponding to the first radio bearer in the list; [Note to Hans: Indentation changed to B3]
  - if the radio bearer identified with the IE “RB identity” already exists in the variable ESTABLISHED_RABS for another radio access bearer than the one identified with the IE "RAB info":
    - set the variable INVALID_CONFIGURATION to TRUE;
  - ~~store information about the new radio bearer in the entry for the radio access bearer identified by "RAB info" in the variable ESTABLISHED_RABS;~~

8.6.4.3 RB information to setup

If the IE "RB information to setup" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- perform the actions for the IE "PDCP info", if present, according to subclause 8.6.4.10, applied for the radio bearer;
- perform the actions for the IE "RLC info", according to subclause 8.6.4.9, applied for the radio bearer;
- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer;
- if the variable CIPHERING_STATUS is set to "Started"; and
  - if the IE "Uplink RLC mode" or the IE "Downlink RLC mode" in the IE "RLC info" is set to "AM RLC" or "UM RLC":
    - calculate the START value according to subclause 8.5.9;
    - store the calculated START value in the variable START_VALUE_TO_TRANSMIT;
    - initialise ciphering on the radio bearer using the calculated START value.
  - start to perform ciphering on the radio bearer in lower layers, using the value of the IE “RB identity” minus one as the value of BEARER in the ciphering algorithm.

8.6.4.4 RB information to be affected

If the IE "RB information to be affected" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer.

8.6.4.5 RB information to reconfigure

If the IE "RB information to reconfigure" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- perform the actions for the IE "PDCP info", if present, according to subclause 8.6.4.10, applied for the radio bearer;
- perform the actions for the IE "RLC info", according to subclause 8.6.4.9, applied for the radio bearer;
- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer;

- if the IE "PDCP SN info" is included:
  - perform the actions as specified in 8.6.4.11 applied for the radio bearer;
- if the IE "RB stop/continue" is included; and
  - if the "RB identity" has a value greater than 2; and
    - if the value of the IE "RB stop/continue" is "stop":
      - configure the RLC entity for the radio bearer to stop;
      - set the IE "RB started" in the variable ESTABLISHED_RABS to "stopped" for that radio bearer;
    - if the value of the IE "RB stop/continue" is "continue":
      - configure the RLC entity for the radio bearer to continue;
      - set the IE "RB started" in the variable ESTABLISHED_RABS to "started" for that radio bearer;
  - if the IE "RB identity" is set to a value less than 2:
    - set the variable INVALID_CONFIGURATION to TRUE.

8.6.4.6 RB information to release

If the IE "RB information to release" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- release the entities in lower layers dedicated for that radio bearer;
- if the information about the radio bearer is stored in the variable ESTABLISHED_RABS:
  - indicate release of the RAB subflow associated with the radio bearer to upper layers;
  - delete the information about the radio bearer from the variable ESTABLISHED_RABS;
  - when all radio bearers belonging to the same radio access bearer have been released:
    - indicate release of the radio access bearer to ~~the~~ upper layers ~~entity using~~ providing the "CN domain identity" together with the "RAB identity" stored in the variable ESTABLISHED_RABS;
    - delete all information about the radio access bearer from the variable ESTABLISHED_RABS.

8.6.4.7 RB with PDCP information

If the IE "RB with PDCP information" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- for the IE "PDCP SN info" perform the actions as specified in subclause 8.6.4.11.

8.6.4.8 RB mapping info

If the IE "RB mapping info" is included, the UE shall, for each transport channel in each multiplexing option of that RB:

- if a "Transport format set" for that transport channel is included in the same message, and the value (index) of any IE "RLC size index" in the IE "RLC size index list" does not correspond to an "RLC size" in the IE transport format set of that transport channel given in the message; or
- if a "Transport format set" for that transport channel is not included in the same message, and the value (index) of any IE "RLC size index" in the IE "RLC size index list" does not correspond to an "RLC size" in the stored transport format set of that transport channel:
  - keep the previously stored multiplexing options for that RB;

- set the variable INVALID_CONFIGURATION to TRUE;

- else:
  - delete all previously stored multiplexing options for that radio bearer;
  - store each new multiplexing option for that radio bearer;
  - use the multiplexing options applicable for the transport channels to be used;
  - configure MAC multiplexing if that is needed in order to use those transport channels;
  - use "MAC logical channel priority" when selecting TFC in MAC.

In case IE "RB mapping info" includes IE "Downlink RLC logical channel info" but IE "Number of downlink RLC logical channels" is absent, the parameter values are exactly the same as for the corresponding UL logical channels. In case two multiplexing options are specified for the UL, the first options shall be used as default for the DL. As regards the IE "Channel type", the following rule should be applied to derive the DL channel type from the UL channel included in the IE:

Channel used in UL	DL channel type implied by "same as"
DCH	DCH
RACH	FACH
CPCH	FACH~~DSCH~~
USCH	DSCH

8.6.4.9 RLC Info

If the IE "RLC Info" is included, the UE shall:

Configure the transmitting and receiving RLC entities in the UE for that radio bearer accordingly.

8.6.4.10 PDCP Info

If IE "PDCP info" is included, the UE shall:

- Configure the PDCP entity for that radio bearer accordingly.

8.6.4.11 PDCP SN Info

If the IE "PDCP SN Info" is included, the UE shall:

- transfer the sequence number to the PDCP entity for the radio bearer;
- configure the RLC entity for the radio bearer to stop;
- include the current PDCP receive sequence number and the radio bearer identity for the radio bearer in the variable PDCP_SN_INFO.

8.6.4.12 NAS Synchronisation Indicator

If the IE "NAS Synchronisation Indicator" is present in a message, the UE shall

- forward the content to ~~the non-access stratum~~upper layers ~~entity for~~ along with the IE “CN domain identity” of the associated RAB stored in the variable ESTABLISHED_RABS
- at the CFN indicated in the IE "Activation time" in order to synchronise actions in NAS and AS.

8.6.5 Transport channel information elements

8.6.5.1 Transport Format Set

If the IE "transport channel identity" and the IE "Transport format set" is included, the UE shall, for the indicated transport channel:

- if the value (index) of any IE "RB identity" (and "Logical Channel" for RBs using two UL logical channels) in the IE "Logical channel list" does not correspond to a logical channel indicated to be mapped onto this transport channel in any RB multiplexing option (either included in the same message or previously stored and not changed by this message):
  - keep the transport format set for that that transport channel;
  - set the variable INVALID_CONFIGURATION to TRUE;
- else:
  - store the transport format set for that transport channel.
  - if the IE "Transport format Set" has the choice "Transport channel type" set to "Dedicated transport channel":
    - calculate the transport block size for all transport formats in the TFS using the following

      TB size = RLC PDU size + MAC header size,

      where:

      - MAC header size is calculated according to 3GPP TS 25.321 if MAC multiplexing is used. Otherwise it is 0 bits.

If neither the IE "transport channel identity" nor the IE "Transport format set" is included, the UE shall:

- consider the stored transport format set as valid information.

The UTRAN should not assign transport formats with different "RLC Size" to any logical channel transferring data using AM RLC. If an AM RLC entity is mapped to two logical channels, UTRAN may configure more than one "RLC Size" for the logical channel transferring control PDUs only.

8.6.5.2 Transport format combination set

If the IE "Transport format combination set" is included, the UE shall for that direction (uplink or downlink):

- remove a previously stored transport format combination set if this exists;
- clear the IE "Duration" in the variable TFC_SUBSET;
- clear the IE "Default TFC subset" in the variable TFC_SUBSET;
- set the IE "Current TFC subset" in the variable TFC_SUBSET to the value indicating "full transport format combination set";
- remove any previous restriction of the transport format combination set;
- store the new transport format combination set present in the IE "Transport format combination set";
- start to respect those transport format combinations.

If the IE "Transport format combination set" is not included and if there is no addition/removal/replacement of transport channels, the UE shall for that direction (uplink or downlink):

- consider a previously stored transport format combination set if this exists as valid information.

For downlink CCTrCHs if no TFCS is stored in the UE the UE shall consider all possible transport format combinations and calculate the possible TFCI values according to the IE transport format combination set.

For downlink CCTrCHs if a TFCS is stored in the UE and

- if the IE "Transport format combination set" is not included and transport channels are deleted in the message, the UE shall:
  - remove the affected transport format combinations from the transport format combination set, recalculate the TFCI values and start to respect those transport format combinations
- if the IE "Transport format combination set" is not included and transport channels are added in the message, the UE shall:
  - consider all possible new combinations to be valid and recalculate the TFCI values and start to respect those transport format combinations. In TDD the new transport format combinations are considered to belong to the TFCS with the ID 1 of DCH type.
- if the IE "Transport format combination set" is not included and transport channels are replaced the UE shall:
  - consider all possible transport format combinations to be valid and calculate the TFCI values accordingly.

If the IE "Transport format combination set" is not included, the TFCI ordering shall correspond to the CTFC ordering.

8.6.5.3 Transport format combination subset

If the IE "Transport format combination subset"("TFC subset") is included, the UE shall:

- if the IE "Minimum allowed Transport format combination index" is included; and
  - if the value of the IE "Minimum allowed Transport format combination index" is outside the range of transport format combinations in the current transport format combination set:
    - consider the TFC subset to be incompatible with the current transport format combination set;
- if the IE "Allowed transport format combination list" is included; and
  - if the value of any of the IEs "Allowed transport format combination" included in the IE "Allowed transport format combination list" is outside the range of transport format combinations in the current transport format combination set:
    - consider the TFC subset to be incompatible with the current transport format combination set;

  if the IE "Non-allowed transport format combination list" is included; and
  - if the value of any of the IEs "Non-allowed transport format combination" included in the IE "Non-allowed transport format combination list" is outside the range of transport format combinations in the current transport format combination set:
    - consider the TFC subset to be incompatible with the current transport format combination set;
- if the IE "Restricted TrCH information" is included:
  - if the value of any of the IEs "Restricted UL TrCH identity" included in the IE "Restricted TrCH information" does not correspond to any of the transport channels for which the current transport format combination set is valid:
    - consider the TFC subset to be incompatible with the current transport format combination set;
  - if the IE "Allowed TFIs" is included; and
    - if the value of any of the IEs "Allowed TFI" included in the IE "Allowed TFIs" does not correspond to a transport format for that transport channel within the current transport format combination set:
      - consider the TFC subset to be incompatible with the current transport format combination set;
- if the UE considers the TFC subset to be incompatible with the current Transport format combination set according to the above:
  - keep any previous restriction of the transport format combination set;

  - set the variable INVALID_CONFIGURATION to TRUE;
- if the UE does not consider the TFC subset to be incompatible with the current Transport format combination set according to the above:
- restrict the transport format combination set in the uplink to the value of the IE "Transport format combination subset" (in case of TDD for the uplink CCTrCH specified by the IE "TFCS Id");
  - set the value of the IE "Default TFC subset" (in case of TDD for the uplink CCTrCH specified by the IE "TFCS Id") in the variable TFC_SUBSET to the value of the IE "Current TFC subset" in the variable TFC_SUBSET;
  - set the IE "Current TFC subset" (in case of TDD for the uplink CCTrCH specified by the IE "TFCS Id") in the variable TFC_SUBSET to the value of the IE "Transport format combination subset";
  - clear the IE "Duration" in the variable TFC_SUBSET;
  - if the transport format combination subset indicates the "full transport format combination set":
    - any restriction on transport format combination set is released and the UE may use the full transport format combination set.

8.6.5.4 DCH quality target

At physical channel establishment, the UE sets an initial downlink target SIR value based on the received IEs "DCH quality target". The IE "DCH quality target" for a given DCH shall be used by the UE to set the target SIR for the downlink power control in case BLER measurement is possible for this DCH, i.e. CRC exists in all transport formats in downlink TFS.

8.6.6 Physical channel information elements

8.6.6.1 Frequency info

If the IE "Frequency info" is included the UE shall:

- Store that frequency as the active frequency; and
- Tune to that frequency.

If the IE "Frequency info" is not included and the UE has a stored active frequency, the UE shall

- Continue to use the stored active frequency.

8.6.6.2 PRACH info and PRACH selection

The UE shall select a PRACH according to the following rule. The UE shall:

  - select a default PRACH from the ones indicated in the IE "PRACH info" in System Information Block type 5 (applicable in Idle Mode and Connected Mode) and System Information Block type 6 (applicable in Connected Mode only), as follows:
    - if both RACH with 10 ms and 20 ms TTI are indicated in System Information Block type 5 and System Information Block type 6:
      - select the appropriate TTI based on power requirements, as specified in subclause 8.6.6.3;
    - select a RACH randomly from the ones listed in System Information Block type 5 and System Information Block type 6 as follows:

      "Index of selected PRACH" = floor (rand * K)

      where K is equal to the number of listed PRACHs which carry an RACH with the above selected TTI, "rand" is a random number uniformly distributed in the range 0,...,1, and "floor" refers to rounding down to nearest integer. RACHs with 10 and 20 ms TTI shall be counted separately. These RACHs shall be indexed from 0 to K-1 in the order of their occurrence in SIB 5 and SIB 6, where RACHs listed in SIB 5 shall be counted first. The random number generator is left to implementation. The scheme shall be implemented such that one of the available RACHs is randomly selected with uniform probability. At startup of the random number generator in the UE the seed shall be dependent on the IMSI of the UE or time, thereby avoiding that all UEs select the same RACH;

  - reselect the default PRACH when a new cell is selected. RACH reselection may also be performed after each transmission of a Transport Block Set on RACH;

- for emergency call, the UE is allowed to select any of the available RACHs.

8.6.6.3 Selection of RACH TTI

In FDD mode, a RACH may employ either 10 or 20 ms TTI. The supported TTI is indicated as a semi-static parameter of the RACH Transport Format in system information. If in one cell RACHs for both 10 and 20 ms TTI are supported, the UE shall select an appropriate RACH according to the following rule:

The UE shall first check whether a RACH Transport Format is available which is suitable for the transmission of the current transport Block Set for both 10 and 20 ms TTI. The UE shall:

- if the required transport format is available only for one particular TTI:
  - select this TTI;
  - identify the corresponding RACHs;
  - proceed with RACH selection as specified in subclause 8.6.6.2.
- if the required transport format is available on both types of RACH, 10 and 20 ms TTI:
  - perform TTI selection as follows:
    - when the UE calculates the initial preamble transmit power ("Preamble_Initial_Power") as specified in subclause 8.5.7:
      - calculate a transmit power margin,

$$\text{Margin} = \{\min(\text{Maximum allowed UL tx power, P\_MAX}) - \max(\text{Preamble\_Initial\_Power}, \text{Preamble\_Initial\_Power} + \Delta\text{Pp-m} + 10*\log_{10}(1 + (\beta_d/\beta_c)^2))\}$$

where "Maximum allowed UL tx power" is the maximum allowed uplink transmit power indicated in system information (in dBm), and P_MAX is the maximum RF output power of the UE (dBm). The margin shall be calculated for 10 ms TTI RACH message gain factors β_d and β_c.

NOTE: the expression Preamble_Initial_Power + ΔPp-m + $10*\log_{10}(1 + (\beta_d/\beta_c)^2)$ represents the total RACH message power if the message would be sent after the initial preamble.

    - if the value of "Margin" calculated for RACH with 10 ms TTI is less than 6 dB:
      - select RACH with 20 ms TTI, and proceed as specified in subclause 8.6.6.2.
    - perform reselection of the RACH TTI only after successful transmission of one Transport Block Set. However in case L1 message transmission on PRACH has failed at least once while using 10 ms TTI, the UE may use the 20 ms TTI RACH for the retransmission. Handling of RACH Message transmission failure is part of general error handling procedure.

8.6.6.4 Downlink information for each radio link

If the IE "Downlink information for each radio link" is included in a received message, the UE shall:

- if the UE would enter CELL_DCH state according to subclause 8.6.3.3 applied on the received message:
  - if the IE "Secondary CCPCH info" is included; and
  - if the UE is not capable of simultaneous reception of DPCH and Secondary CCPCH:

- set the variable UNSUPPORTED_CONFIGURATION to TRUE;
- else:
  - if the UE is capable of simultaneous reception of DPCH and SCCPCH:
    - start to receive the indicated Secondary CCPCH;
- act on the other IEs contained in the IE "Downlink information for each radio link" as specified in subclause 8.6.

- if the UE would enter either the CELL_FACH, CELL_PCH or URA_PCH state according to subclause 8.6.3.3 applied on the received message:
  - if the received message is CELL UPDATE CONFIRM:
    - set the variable INVALID_CONFIGURATION to TRUE;
  - if the received message is any other message than CELL UPDATE CONFIRM; and
  - if other IEs than the IE "Primary CPICH info" (for FDD) or the IE "Primary CCPCH info" (for TDD) are included in the IE "Downlink information for each radio link":
    - set the variable INVALID_CONFIGURATION to TRUE.
  - ~~set the variable INVALID_CONFIGURATION to TRUE.~~

8.6.6.5 Secondary CCPCH info

In UTRAN Connected mode, the UE shall select the Secondary CCPCH according to the following rules:

- in Cell_DCH state:
  - select Secondary CCPCH according to subclause 8.6.6.4;
- in Cell_FACH state:
  - select an SCCPCH from the SCCPCHs listed in System Information Block types 5 and 6 (SIB 5 and SIB 6) based on U-RNTI as follows:

    "Index of selected SCCPCH" = U-RNTI mod K,

    where K is equal to the number of listed SCCPCHs which carry a FACH (i.e., SCCPCHs carrying PCH only shall not be counted). These SCCPCHs shall be indexed from 0 to K-1in the order of their occurrence in SIB 5 and SIB 6, and "Index of selected SCCPCH" identifies the selected SCCPCH. SCCPCHs included in SIB 5 shall be indexed first.

  in Cell_PCH and URA_PCH states:
  - select an SCCPCH from the SCCPCHs listed in SIB 5 and SIB 6 based on U-RNTI as follows:

    "Index of selected SCCPCH" = U-RNTI mod K,

    where K is equal to the number of listed SCCPCHs which carry a PCH (i.e., SCCPCHs carrying FACH only shall not be counted). These SCCPCHs shall be indexed in the order of their occurrence in system information from 0 to K-1, and "Index of selected SCCPCH" identifies the selected SCCPCH.

UE shall set CFN in relation to SFN of current cell according to subclause 8.5.15.

8.6.6.6 Uplink DPCH info

If the IE "Uplink DPCH info" is included, the UE shall:

- release any active uplink physical channels and activate the given physical channels.

8.6.6.7 Downlink DPCH info

If the IE "Downlink DPCH info" is included, the UE shall:

- activate the dedicated physical channels indicated by that IE.

If the IE "Downlink DPCH info" is included in a message used to establish the first RL(s) for a UE or perform a Timing re-initialised hard handover, the UE shall, after having activated the dedicated physical channels indicated by that IE:

- set CFN in relation to SFN of the first RL (cell) listed in that message, according to subclause 8.5.15;

If the IE "Downlink DPCH info" is included in a message used to perform a Timing re-initialised hard handover, and ciphering is active for any radio bearer using RLC-TM, the UE shall, after having activated the dedicated physical channels indicated by that IE:

- increment HFN for RLC-TM by '1';

If the IE "Downlink DPCH info" is included in a message used to perform a Timing-maintained hard handover, UE shall, after having activated the dedicated physical channels indicated by that IE:

- increase CFN (mod 256) by 1 every frame and maintain UL transmission timing.

8.6.6.8 Maximum allowed UL TX power

If the IE "Maximum allowed UL TX power" is included, the UE shall:

- keep the UE uplink transmit power below the indicated power value. If the current UE uplink transmit power is above the indicated power value, the UE shall decrease the power to a level below the power value.

The maximum UE transmitter power is defined as the lower of the maximum output power of the UE power class and the maximum allowed UL TX power indicated in this IE. The maximum UE transmitter power shall not be exceeded.

8.6.6.9 PDSCH with SHO DCH Info (FDD only)

If the IE "PDSCH with SHO DCH Info" is included, the UE shall:

- configure itself such that when an allocation on the DSCH is made it will receive the PDSCH from the specified BS within the active set;

and in cases where the TFCI for the user in question has a 'hard' split (meaning that TFCI(field 1) and TFCI (field 2) have their own individual block coding):

- configure the Layer 1 to only soft combine the DPCCH TFCI(field 2) of the radio links within the associated DCH active set which are specified;
- infer that the set of radio links for which TFCI (field 2) should be soft combined will include all radio links within the active set if the IE "TFCI combining set" is not included and the sending of the message in which the IE "PDSCH with SHO DCH Info" is being used will result in a transport channel switch from a state in which the DSCH transport channel was not available to a state in which it is available.

8.6.6.10 PDSCH code mapping (FDD only)

If the IE "PDSCH code mapping" is included, the UE shall:

- Configure Layer 1 to support the mapping of TFCI(field 2) values to PDSCH channelisation codes as specified in the IE.

8.6.6.11 Uplink DPCH power control info

The UE shall:

- in FDD:
  - if the IE "Uplink DPCH power control info" is included:

        - calculate and set an initial uplink transmission power;
        - start inner loop power control as specified in subclause 8.5.3;
        - for the UL inner loop power control:
            - use the parameters specified in the IE.
- in TDD:
    - if the IE "Uplink DPCH power control info" is included:
        - use the parameters specified in the IE for open loop power control as defined in subclause 8.5.7.
- both in FDD and TDD;
    - if the IE "Uplink DPCH power control info" is not included:
        - use the current uplink transmission power.

8.6.6.12 Secondary CPICH info

If the IE Secondary CPICH info is included, the UE:

- May use the channelisation code according to IE "channelisation code", with scrambling code according to IE "DL scrambling code" in the IE "Secondary CPICH info", for channel estimation of that radio link;
- May use the pilot bits on DPCCH for channel estimation.

8.6.6.13 Primary CPICH usage for channel estimation

If the IE "Primary CPICH usage for channel estimation" is included and has the value "Primary CPICH may be used" the UE:

- may use the Primary CPICH for channel estimation;
- may use the pilot bits on DPCCH for channel estimation.

If the IE "Primary CPICH usage for channel estimation" is included and has the value "Primary CPICH shall not be used" the UE:

- shall not use the Primary CPICH for channel estimation;
- may use the Secondary CPICH for channel estimation
- may use the pilot bits on DPCCH for channel estimation.

8.6.6.14 DPCH frame offset

If the IE "DPCH frame offset" is included the UE shall:

- use its value to determine the beginning of the DPCH frame

8.6.6.15 DPCH Compressed mode info

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" are included, the UE shall:

- update each pattern sequence to the variable TGPS_IDENTITY according to the IE "TGPSI";
- update into the variable TGPS_IDENTITY the configuration information defined by IE group" transmission gap pattern sequence configuration parameters ";

- activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" at the time indicated by IE "TGCFN" and begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;

- monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified in subclause 8.2.11.2;

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is not included, the UE shall:

- activate, at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" and begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;

- deactivate, at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "deactivate" and terminate the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each deactivated pattern sequence;

8.6.6.16 Repetition period, Repetition length, Offset

The following description applies to TDD only.

The frame allocation can be derived by following rules:

If no IE "Offset" is explicitly given, the parameter "Offset" to be used is calculated by the following equation:

Activation time mod Repetition period = Offset.

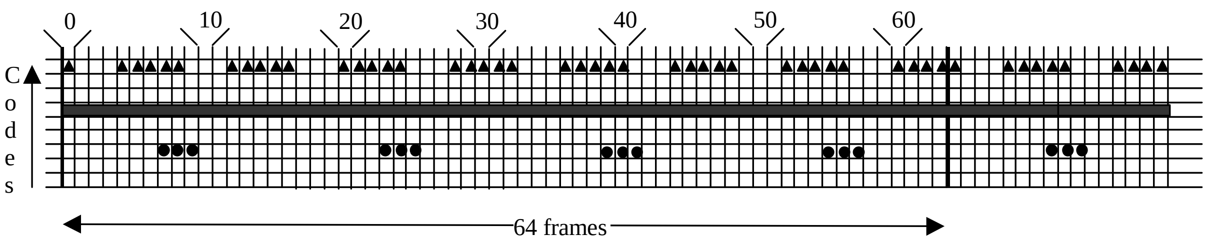
Frames from CFN CFN_{off} to CFN_{off} + Repetition length belong to the allocation with CFN_{off} fulfilling the following equation:

CFN_{off} mod Repetition period = Offset.

Repetition length is always a multiple of the largest TTI within the CCTrCH fulfilling the following equation:

(largest TTI within CCTrCH) * X = Repetition Length

Example of usage:



▲ physic. channel (Code 7; Repetition period=8; Repetition length=5; Activation time = 4 => Offset = 4 => CFN_{off} = 4, 12, 20, 28, 36, 44, 52, 60)

■ physic. channel (Code 5; Repetition Period=1 => Repetition length=0; Offset = 0 => CFN_{off} = 0, 1, 2, 3, 4, ... (continuous allocation))

● physic. channel (Code 3; Repetition period=16; Repetition length=3; Activation time = 23 =>Offset = 7 => CFN_{off} = 7, 23, 39, 55)

Figure 60: Examples for frame allocations in TDD

8.6.6.17 Primary CCPCH info

If the IE "Primary CCPCH info" in TDD and the IE "New C-RNTI" are included and the message including these IEs is used to initiate a state transition to CELL_FACH, the UE shall:

- select the cell indicated by the IE "Primary CCPCH info";
- use the given C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

8.6.6.18 Primary CPICH info

If the IE "Primary CPICH info" in FDD and the IE "New C-RNTI" a are included and the message including these IEs is used to initiate a state transition to CELL_FACH, the UE shall:

- select the cell indicated by the IE "Primary CPICH info";
- use the given C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

8.6.6.19 CPCH SET Info (FDD only)

If the UE has the capability to use CPCH, the UE shall use the following general procedures:

- if an IE "CPCH SET Info" is included in a dedicated message:
  - read the "CPCH set ID" included in the IE;
  - store the IE using the "CPCH set ID" as an address tag;
  - release any active dedicated physical channels in the uplink;
  - let the PCPCHs listed in the CPCH set be the default in the uplink for CPCH;
- if an IE "CPCH SET Info" is included in a System Information message:
  - read the "CPCH set ID" included in the IE;
  - store the IE using the "CPCH set ID" as an address tag.

8.6.6.20 CPCH set ID (FDD only)

If the UE has the capability to use CPCH, the UE shall use the following general procedures:

- If an IE "CPCH set ID" is included in a dedicated message and not as part of IE "CPCH SET Info":
  - use the IE as an address tag to retrieve the corresponding stored "CPCH SET Info";
  - release any active dedicated physical channels in the uplink;
  - let the PCPCHs listed in the CPCH set be the default in the uplink for CPCH.
- if an IE "CPCH set ID" is included in a dedicated message and not as part of IE "CPCH SET Info", and if there is no corresponding stored "CPCH SET Info":
  - release any active dedicated physical channels in the uplink;
  - let the last assigned PRACH be the default in the uplink for RACH;
  - obtain current System Information on SCCPCH to obtain and store the "CPCH SET info" IE(s);
  - upon receipt of a "CPCH SET Info" which corresponds to the "CPCH set ID" IE:
    - let the PCPCHs listed in that CPCH set be the default in the uplink for CPCH.

8.6.6.21 Default DPCH Offset Value

The UE shall:

- if the IE "Default DPCH Offset Value" is included:

  - use its value to determine Frame Offset and Chip Offset from the SFN timing in a cell;
- if the IE "Default DPCH Offset Value" is not included:
  - use the previously received value stored in variable DOFF. If there is no previously received value stored in DOFF, the UE should use the value 0.

After transition from CELL_DCH state to other states, the UE shall erase the value stored in variable DOFF.

8.6.6.22 Secondary Scrambling Code, Code Number

The following description applies to FDD.

Code Number can be assigned by following rules:

- When more than one DL DPDCH is assigned per RL, the segmented physical channel shall be mapped on to DL DPDCHs according to 3GPP TS 25.212. When *p* number of DL DPDCHs are assigned to each RL, the first pair of Secondary Scrambling Code and Code Number corresponds to "*PhCH number 1*", the second to "*PhCH number 2"*, and so on until the *p*th to "*PhCH number p*".

8.6.6.23 PDSCH Power Control info

If the IE "PDSCH Power Control info" is included the UE shall:

- configure PDSCH power control with the received values.

If the IE "PDSCH Power Control info" is not included the UE shall:

- continue to use the stored values.

8.6.7 Measurement information elements

8.6.7.1 Measurement validity

If the optional IE "measurement validity" for a given measurement has not been included in measurement control information, the UE shall delete the measurement associated with the variable MEASUREMENT IDENTITY after the UE makes a transition to a new state.

If the IE "measurement validity" for this measurement has been included in measurement control information, the UE shall save the measurement associated with the variable MEASUREMENT IDENTITY. The IE "UE state" defines the scope of resuming the measurement.

If the "UE state" is defined as "all states", the UE shall continue the measurement after making a transition to a new state. This scope is assigned only for traffic volume type measurements and can only be applied by the UE if the IE "measurement object" has not been included in measurement control information. If the IE "measurement object" has been included in measurement control information, the UE shall not save the measurement control information in variable MEASUREMENT IDENTITY, but shall send a MEASUREMENT CONTROL FAILURE message to the UTRAN with failure cause "incomplete configuration".

If the "UE state" is defined as "all states except CELL_DCH", the UE shall store the measurement to be resumed after a subsequent transition from CELL_DCH state to any of the other states in connected mode. This scope is assigned only for traffic volume type measurements.

If the "UE state" is defined as "CELL_DCH", the UE shall store the measurement to be resumed after a subsequent transition to CELL_DCH state. After cell re-selection, the UE shall delete any ongoing intra-frequency or inter-frequency and inter-RAT type measurement associated with the variable MEASUREMENT IDENTITY. Other measurement types shall, however, be continued regardless of cell reselection.

8.6.7.2 Filter coefficient

If the IE "Filter coefficient" is received the UE shall apply filtering of the measurements for that measurement quantity according to the formula below. This filtering shall be performed by the UE before UE event evaluation. The UE shall also filter the measurements reported in the IE "Measured results" or the IE "Measurement results on RACH". The filtering shall not be performed for cell-reselection in connected or idle mode.

The filtering shall be performed according to the following formula.

$$F_n = (1-a)\cdot F_{n-1} + a\cdot M_n$$

The variables in the formula are defined as follows:

F_n is the updated filtered measurement result

F_{n-1} is the old filtered measurement result

M_n is the latest received measurement result from physical layer measurements, the unit used for M_n is the same unit as the reported unit in the MEASUREMENT REPORT message or the unit used in the event evaluation.

$a = 1/2^{(k/2)}$, where k is the parameter received in the IE "Filter coefficient".

NOTE: if a is set to 1 that will mean no layer 3 filtering.

In order to initialise the averaging filter, F_0 is set to M_1 when the first measurement result from the physical layer measurement is received.

The physical layer measurement results are sampled once every measurement period. The measurement period and the accuracy for a certain measurement is defined in 3GPP TS 25.133.

8.6.7.3 Intra-frequency/Inter-frequency/Inter-RAT cell info list

If

- IE "Intra-frequency cell info list" is received and,
  - "Removed intra-frequency cells" or/and,
  - "New intra-frequency cells" is present in the received IE,

Or,

- IE "Inter-frequency cell info list" is received and,
  - "Removed inter-frequency cells" or/and,
  - "New inter-frequency cells" is present in the received IE,

Or,

- IE "Inter-RAT cell info list" is received and,
  - "Removed inter-RAT cells" or/and,
  - "New inter-RAT cells" is present in the received IE

the UE shall update measurement objects for that measurement accordingly.

If:

- IE "Intra-frequency cell info list" is included, but
  - neither "Removed intra-frequency cells" nor "New intra-frequency cells" is included,

Or,

If IE "Inter-frequency cell info list" is included, but

  - neither "Removed inter-frequency cells" nor "New inter-frequency cells" is included,

Or,

If IE "Inter-RAT cell info list" is included, but

- neither "Removed inter-RAT cells" nor "New inter-RAT cells" is included,

the UE shall not change the information on that measurement object. (This case is applied only when Measurement Command is set to "Modify".)

If one of these IEs is not received, UE shall re-order the same measurement type using the measurement ID in ascending order, and use the preceding measurement ID's measurement object information. (For example, suppose UE is assigned 3 measurement IDs (suppose they were ID10, 11, and 15) for intra-frequency measurement, and UE did not receive "Intra-frequency cell info" for Measurement ID 15. When performing the measurement assigned with 15, UE shall use the measurement object information associated with Measurement ID 11).

8.6.7.4 Intra-frequency measurement quantity

If the IE "Intra-frequency measurement quantity" is received, the UE shall:

- check the parameter "Measurement quantity"; and
- if the measurement quantity is set to "pathloss":
  - check whether the parameter "Primary CPICH Tx power" has been included for every intra-frequency cell in the IE "cell info" stored in variable MEASUREMENT_IDENTITY; and
  - if the parameter " Primary CPICH Tx power" is missing from any cell in the intra-frequency cell info list:
    - send to the UTRAN a MEASUREMENT CONTROL FAILURE message with the "Failure cause "parameter set to "Configuration incomplete".

8.6.7.5 Inter-RAT measurement quantity

If the IE "Inter-RAT measurement quantity" is received and CHOICE system is GSM, the UE shall:

- check the IE "BSIC verification required".
- if IE "BSIC verification required" is set to "required", for cells that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", and that has a "verified" BSIC:
  - report measurement quantities according to IE "inter-RAT reporting quantity";;
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria".
- if IE "BSIC verification required" is set to "not required", for cells that match any of the BCCH ARFCN in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", regardless if the BSIC is "verified" or "non-verified":
  - report measurement quantities according to IE "inter-RAT reporting quantity".
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria".

NOTE: The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

- check the parameter "Measurement quantity":
- if the measurement quantity is set to "pathloss":
  - check whether the parameter "Output power" has been included for every inter-RAT cell in the IE "inter-RAT cell info list" stored in variable MEASUREMENT_IDENTITY;
  - if the parameter "output power" is missing from any cell in the inter-RAT cell info list:
    - send to the UTRAN a MEASUREMENT CONTROL FAILURE message with the "Failure cause" parameter set to "Configuration incomplete".

8.6.7.6 Inter-RAT reporting quantity

If the IE "Inter-RAT reporting quantity" is received by the UE, the UE shall

store the content of the IE to the variable MEASUREMENT_IDENTITY.

- If the IE "Inter-RAT measurement quantity" is received and CHOICE system is GSM, the UE shall check each quantity in the GSM choice. The UE shall include measured results in MEASUREMENT REPORT as specified in the IE "Inter-RAT reporting quantity" with the following restrictions:

  - if the UE has not confirmed the BSIC of the measured cell, then:
    - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.
  - if the UE has confirmed the BSIC of the measured cell, then:
    - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor "BSIC re-confirmation" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.
  - If IE "Pathloss" is set to "TRUE",
    - include optional IE "Pathloss" with a value set to the measured pathloss to that GSM cell in IE "Inter-RAT measured results list"
  - If IE "Observed time difference to GSM cell" is set to "TRUE",
    - include optional IE "Observed time difference to GSM cell" with the value set to the time difference to that GSM cell for the GSM cells that have a BSIC that is "verified", and that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list". Observed time difference to GSM cells with "non-verified" BSIC shall not be included.
  - If IE "GSM Carrier RSSI" is set to "TRUE",
    - include optional IE "GSM Carrier RSSI" with a value set to the measured RXLEV to that GSM cell in IE "Inter-RAT measured results list"
  - If the BSIC of reported GSM cell is "verified"
    - set the CHOICE BSIC to "Verified BSIC" and IE "inter-RAT cell id" to the value that GSM cell had in the IE "Inter-RAT cell info list".
  - If the BSIC of reported GSM cell is "non-verified"
    - set the CHOICE BSIC to "Non verified BSIC" and the IE "BCCH ARFCN" to the value of that GSM cells ARFCN.

The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

8.6.7.7 Cell Reporting Quantities

If the IE "Cell Reporting Quantities" is received by the UE, the UE shall store the content of the IE "Cell Reporting Quantities" to the variable MEASUREMENT_IDENTITY.

The UE shall include measured results in MEASUREMENT REPORT as specified in the IE "Cell Reporting Quantities", except for the following cases:

If the IE "Cell Identity" is set to TRUE, the UE shall:

- in CELL_FACH state:
  - report the IE "Cell Identity" that is given in System Information Block type 4 (or System Information Block type 3, if System Information Block type 4 is not being broadcast).

- in CELL_DCH state:
    - treat the IE as if the IE "Cell Identity" is set to FALSE.

If the IE "Cell synchronisation information reporting indicator" is set to TRUE, the UE shall:

- include the IE "Cell synchronisation information" in MEASUREMENT REPORT as specified in the IE "Cell Reporting Quantities":
    - if the measurement is performed on another frequency:
        - a UE may omit the information group "COUNT-C-SFN frame difference" in the IE "Cell synchronisation information".
    - if the measurement is performed on the same frequency and no RLC Transparent Mode COUNT-C exists in the UE:
        - set the IE "COUNT-C-SFN high" to 0.
    - otherwise:
        - include the information group "COUNT-C-SFN frame difference".

If the IE "Proposed TGSN Reporting required" is set to TRUE, the UE shall:

- if compressed mode was used to monitor a TDD cell and the variable TGSN_REPORTED is set to FALSE:
    - report the IE "Proposed TGSN" indicating the TGSN that suits best to the measured cell;
    - set the variable TGSN_REPORTED to TRUE.
- otherwise
    - omit the IE "Proposed TGSN".

8.6.7.8 Periodical Reporting Criteria

If the IE "Periodical Reporting Criteria" is received by the UE, the UE shall store the contents of the IE "Amount of Reporting" and IE "Reporting interval" in the variable MEASUREMENT_IDENTITY.

The UE shall send the first MEASUREMENT REPORT message as soon as the first measurement has been completed according to the requirements set in 3GPP TS 25.133. After this, the UE shall send the next MEASUREMENT REPORT messages with intervals specified by the IE "Reporting interval".

After the UE has sent a total number of MEASUREMENT REPORT messages, which equal the value indicated in the IE "Amount of reporting", the UE shall terminate measurement reporting and delete all measurement information linked with the "Measurement identity" of the ongoing measurement from the variable MEASUREMENT_IDENTITY.

8.6.7.9 Reporting Cell Status

If the IE "Reporting Cell Status" is received, the UE shall set the IE "Measured Results" in MEASUREMENT REPORT as follows:

- for intra-frequency measurement and inter-frequency measurement:
    - include the IE "Cell Measured Results" for cells that satisfy the condition (such as "Report cells within active set") specified in "Reporting Cell Status", in descending order by the measurement quantity.
- the maximum number of the IE "Cell Measured Results" to be included in the IE "Measured Results" is the number specified in "Reporting Cell Status".

If the IE "Reporting Cell Status" is not received for intra-frequency or inter-frequency measurement, the UE shall:

- exclude the IE "cell measured results" for any cell in MEASUREMENT REPORT.

8.6.7.10 Traffic Volume Measurement

If the IE "Traffic Volume Measurement" is received by the UE, the UE shall store the content of the IE to the variable MEASUREMENT_IDENTITY.

If the IE "Traffic volume measurement Object" is not included, the UE shall apply the measurement reporting criteria to all uplink transport channels.

8.6.7.11 Traffic Volume Reporting Criteria

If the IE "Traffic Volume Reporting Criteria" is received by the UE, the UE shall store the content of the IE "Traffic Volume Reporting Criteria" to the variable MEASUREMENT_IDENTITY.

If the IE "UL transport channel id" is not included, the UE shall apply the measurement reporting criteria to all uplink transport channels indicated in the "Traffic volume measurement Object". If the UTRAN has not specified a traffic volume measurement object for a given measurement identity, the UE shall apply the measurement reporting criteria to all uplink transport channels, which it is using.

8.6.7.12 FACH measurement occasion info

IE "FACH measurement occasion info" is used to control UE measurement activities in inter-frequency and inter-RAT cells in CELL_FACH state.

If IE "FACH measurement occasion info" is received, UE shall, when in CELL_FACH state:

- if IE "FACH Measurement occasion length coefficient" is included; and
  - if, according to its measurement capabilities, UE is not able to perform some of the indicated measurements in this IE simultaneously as receiving the SCCPCH of serving cell:
    - perform those measurements during FACH measurement occasions, see subclause 8.5.12.
- if, according to its measurement capabilities, UE is able to perform some of the indicated measurements in this IE simultaneously as receiving the SCCPCH of serving cell:
    - UE may perform measurements also on other occasions.
- if, according to its measurement capabilities, UE is able to perform the measurements supported by UE and indicated in this IE simultaneously as receiving the SCCPCH of serving cell:
    - perform the measurements simultaneously as receiving the SCCPCH of serving cell.
- if IE "FACH Measurement occasion length coefficient" is not included:
  - perform those indicated measurements indicated in this IE that UE, according to its measurement capabilities, is able to perform simultaneously as receiving the SCCPCH of serving cell.
- if IE "Inter-frequency FDD measurement indicator" is set to TRUE:
  - perform measurements and evaluate cell re-selection criteria according to 3GPP TS 25.304 on inter-frequency FDD cells listed in IE "Measurement control system information" in "System Information Block type 11" or "System Information Block type 12".
- if IE "Inter-frequency FDD measurement indicator" is set to FALSE:
  - neither perform measurements nor evaluate cell re-selection criteria on inter-frequency FDD cells.
- if IE "Inter-frequency TDD measurement indicator" is set to TRUE:
  - perform measurements and evaluate cell re-selection criteria according to 3GPP TS 25.304 on inter-frequency TDD cells listed in IE "Measurement control system information" in "System Information Block type 11" or "System Information Block type 12".
- if IE "Inter-frequency TDD measurement indicator" is set to FALSE:

    - neither perform measurements nor evaluate cell re-selection criteria on inter-frequency TDD cells.

- if IE "Inter-RAT measurement indicators" is included:
    - perform measurements and evaluate cell re-selection criteria according to 3GPP TS 25.304 on those cells of listed Inter-RAT types that are present in IE "Measurement control system information" in "System Information Block type 11" or "System Information Block type 12".

9 Handling of unknown, unforeseen and erroneous protocol data

9.1 General

This subclause specifies procedures for the handling of unknown, unforeseen, and erroneous protocol data by the receiving entity. These procedures are called "error handling procedures", but in addition to provide recovery mechanisms for error situations they define a compatibility mechanism for future extensions of the protocol.

The error handling procedures specified in this subclause shall apply to all RRC messages. When there is a specific handling for messages received on different logical channels this is specified.

When the UE receives an RRC message, it shall set the variable PROTOCOL_ERROR_REJECT to FALSE and then perform the checks in the order as defined below.

The procedures specified in clause 8 are applied only for the messages passing the checks as defined below, except when procedure specific handling is used to recover from the error.

9.2 ASN.1 violation or encoding error

If the UE receives a message on the DCCH for which the encoded message does not result in any valid abstract syntax value, it shall perform the following:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Transmit an RRC STATUS message on the uplink DCCH. The IE "Protocol error information" shall contain an IE "Protocol error cause" set to "ASN.1 violation or encoding error".
- When RRC STATUS message has been submitted to lower layers for transmission, the UE RRC shall continue with any ongoing processes and procedures ~~operation~~ as if the invalid message had not been received.

If the UE receives a message on the BCCH, PCCH, CCCH or SHCCH for which the encoded message does not result in any valid abstract syntax value, it shall ignore the message.

9.3 Unknown or unforeseen message type

If a UE receives an RRC message on the DCCH with a message type ~~reserved for future extension~~not defined for the DCCH it shall:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Transmit an RRC STATUS message on the uplink DCCH. The IE "Protocol error information" shall contain an IE "Protocol error cause" set to "Message type non-existent or not implemented".
- When the RRC STATUS message has been submitted to lower layers for transmission, the UE RRC shall continue with any ongoing processes and procedures ~~operation~~ as if the invalid message had not been received.

If the UE receives a message on the BCCH, PCCH, CCCH or SHCCH with a message type not defined for the logical channel type the message was received on~~reserved for future extension~~ it shall ignore the message.

9.3a Unsolicited received message

If the UE receives any of the following messages:

- a RRC CONNECTION SETUP message addressed to the UE on the CCCH; or
- a RRC CONNECTION REJECT message addressed to the UE on the CCCH; or
- a UE CAPABILITY INFORMATION CONFIRM message on the DCCH; or
- a CELL UPDATE CONFIRM message addressed to the UE on the CCCH or on the DCCH; or
- a URA UPDATE CONFIRM message addressed to the UE on the CCCH or on the DCCH

and no procedure is ongoing according to clause 8 which expects the message to be received, the UE shall ignore the received message.

9.3b Unexpected critical message extension

If the UE receives a message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, containing an undefined critical message extension, the UE shall:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Message extension not comprehended".
- Perform procedure specific error handling according to clause 8.

If the UE receives a message on the BCCH or PCCH, containing an undefined critical message extension, the UE shall ignore the message.

9.4 Unknown or unforeseen information element value, mandatory information element

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, with a mandatory IE having a value, including choice, reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value for this IE, the UE shall

- If ~~criticality of the IE is defined as "Ignore" and if~~ a default value of the IE is defined, treat the rest of the message using the default value of the IE.
- If ~~criticality of the IE is defined as "Reject" or~~ no default value of the IE is defined:
  - Set the variable PROTOCOL_ERROR_REJECT to TRUE.
  - Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Information element value not comprehended".
  - Perform procedure specific error handling according to clause 8.

If the UE receives an RRC message on the BCCH or PCCH with a mandatory IE having a value reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value for this IE, it shall

- If ~~criticality of the IE is defined as "Ignore" and if~~ a default value of the IE is defined, treat the rest of the message using the default value of the IE.
- If ~~criticality of the IE is defined as "Reject" or~~ no default value of the IE is defined, ignore the message.

9.5 Conditional information element error

If the UE receives an RRC message on the DCCH, BCCH, PCCH, or addressed to the UE on the CCCH, for which the specified conditions for absence of a conditional IE are met and that IE is present, the UE shall:

- Ignore the IE.
- Treat the rest of the message as if the IE was not present.

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, for which the specified conditions for presence of a conditional IE are met and that IE is absent, the UE shall:

- Set the variable PROTOCOL_ERROR_REJECT to TRUE.
- Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Conditional information element error".
- Perform procedure specific error handling according to clause 8.

If the UE receives an RRC message on the BCCH or PCCH for which the specified conditions for presence of a conditional IE are met and that IE is absent, the UE shall ignore the message.

9.6 Unknown or unforeseen information element value, conditional information element

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, for which the specified conditions for presence of a conditional IE are met, that IE is present, and that IE has a value, including choice, reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value for this IE, the UE shall

- If ~~criticality of the IE is defined as "Ignore" and if~~ a default value of the IE is defined, treat the rest of the message using the default value of the IE.
- If ~~criticality of the IE is defined as "Reject" or~~ no default value of the IE is defined:
  - Set the variable PROTOCOL_ERROR_REJECT to TRUE.
  - Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Information element value not comprehended".
  - Perform procedure specific error handling according to clause 8.

If the UE receives an RRC message on the BCCH or PCCH for which the specified conditions for presence of a conditional IE are met, that IE is present, and that IE has a value, including choice, reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value for this IE, the UE shall

- If ~~criticality of the IE is defined as "Ignore" and if~~ a default value of the IE is defined, treat the rest of the message using the default value of the IE.
- If ~~criticality of the IE is defined as "Reject" or~~ no default value of the IE is defined, ignore the message.

9.7 Unknown or unforeseen information element value, optional information element

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, with an optional IE having a value, including choice, reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value for this IE, ~~and the criticality for that IE is specified as "ignore",~~ it shall:

- Ignore the value of the IE.
- Treat the rest of the message as if the IE was not present.

~~If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, with an optional IE having a value, including choice, reserved for future extension and the criticality for that IE is specified as "reject", it shall:~~

- ~~Set the variable PROTOCOL_ERROR_REJECT to TRUE.~~
- ~~Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Information element value not comprehended".~~
- ~~Perform procedure specific error handling according to clause 8.~~

If the UE receives an RRC message on the BCCH or PCCH with an optional IE having a value, including choice, reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value for this IE, it shall:

- Ignore the value of the IE.
- Treat the rest of the message as if the IE was not present.

9.8 Unexpected non-critical message extension

If the UE receives a message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, containing ~~at least one information element in an extension for which a content is not defined, and therefore not expected~~an undefined non-critical message extension, the UE shall: ~~check the criticality of that extension, if defined.~~

- ~~If the criticality for the extension is defined and is set to "Ignore", the UE shall~~ ignore the content of the extension and the message contents after the extension, but treat the parts of the message up to the extension normally.
- ~~If the criticality for the extension is defined and is set to "Reject", or if the criticality is not defined, the UE shall:~~
  - ~~Set the variable PROTOCOL_ERROR_REJECT to TRUE.~~
  - ~~Set the IE "Protocol error cause" in the variable PROTOCOL_ERROR_INFORMATION to "Message extension not comprehended".~~
  - ~~Perform procedure specific error handling according to clause 8.~~

If the UE receives a message on the BCCH or PCCH, containing an undefined non-critical message extension~~at least one information element in an extension for which a content is not defined, and therefore not expected~~, the UE shall: ~~check the criticality of that extension, if defined.~~

- ~~If the criticality for the extension is defined and is set to "Ignore", the UE shall~~ ignore the content of the extension and the message contents after the extension, but treat the parts of the message up to the extension normally.
- ~~If the criticality for the extension is defined and is set to "Reject", or if the criticality is not defined, the UE shall ignore the message.~~

10.1.1.2 Extension of a message with additional information elements

In future releases of this protocol, RRC messages may be extended with new information elements. These additional information elements shall always be included at the end of the message.

UTRAN is able to control the behaviour of a UE receiving a message extended with a not comprehended additional information element by indicating for each extension the "criticality" which may be "ignore" or "reject". Therefore UTRAN indicates the criticality for extensions provided in all messages it sends towards the UE, with the exception of broadcast messages. In the direction from UE to UTRAN, not criticality information is included for protocol extensions added at the end of a message. This is shown in the following table. Furthermore, the table indicates at which level extensions are included for the SYSTEM INFORMATION message.

Type	Message
Extensions and criticality	ACTIVE SET UPDATE 10.2.1 ASSISTANCE DATA DELIVERY 10.2.4 CELL UPDATE CONFIRM 10.2.5 DOWNLINK DIRECT TRANSFER 10.2.11 ~~DOWNLINK OUTER LOOP CONTROL 10.2.9~~ HANDOVER TO UTRAN COMMAND 10.2.12 HANDOVER FROM UTRAN COMMAND10.2.15 MEASUREMENT CONTROL10.2.17 PAGING TYPE 110.2.20 PAGING TYPE 210.2.21 PHYSICAL CHANNEL RECONFIGURATION10.2.22 PHYSICAL SHARED CHANNEL ALLOCATION10.2.25 RADIO BEARER RECONFIGURATION10.2.27 RADIO BEARER RELEASE10.2.30 RADIO BEARER SETUP10.2.33 RRC CONNECTION REJECT10.2.36 RRC CONNECTION RELEASE10.2.37 RRC CONNECTION SETUP10.2.40 SECURITY MODE COMMAND10.2.43 SIGNALLING CONNECTION RELEASE10.2.46 SIGNALLING CONNECTION RELEASE REQUEST10.2.47 TRANSPORT CHANNEL RECONFIGURATION10.2.50 TRANSPORT FORMAT COMBINATION CONTROL10.2.53 UE CAPABILITY ENQUIRY10.2.55 UE CAPABILITY INFORMATION CONFIRM10.2.57 UPLINK PHYSICAL CHANNEL CONTROL10.2.59 URA UPDATE CONFIRM10.2.61 UTRAN MOBILITY INFORMATION10.2.62
Extensions	ACTIVE SET UPDATE COMPLETE 10.2.2 ACTIVE SET UPDATE FAILURE 10.2.3 CELL UPDATE 10.2.7 COUNTER CHECK RESPONSE 10.2.10 HANDOVER TO UTRAN COMPLETE10.2.13 INITIAL DIRECT TRANSFER10.2.14 HANDOVER FROM UTRAN FAILURE10.2.16 MEASUREMENT CONTROL FAILURE10.2.18 MEASUREMENT REPORT10.2.19 PHYSICAL CHANNEL RECONFIGURATION COMPLETE10.2.23 PHYSICAL CHANNEL RECONFIGURATION FAILURE10.2.24 PUSCH CAPACITY REQUEST10.2.26 RADIO BEARER RECONFIGURATION COMPLETE10.2.28 RADIO BEARER RECONFIGURATION FAILURE10.2.29 RADIO BEARER RELEASE COMPLETE10.2.31 RADIO BEARER RELEASE FAILURE10.2.32 RADIO BEARER SETUP COMPLETE10.2.34 RADIO BEARER SETUP FAILURE10.2.35 RRC CONNECTION RELEASE COMPLETE10.2.38 RRC CONNECTION REQUEST10.2.39 RRC CONNECTION SETUP COMPLETE10.2.41 RRC STATUS10.2.42 SECURITY MODE COMPLETE10.2.44 SECURITY MODE FAILURE10.2.45 Master Information Block10.2.48.8.1 System Information Block type 1 to System Information Block type 1710.2.48.8.2 to10.2.48.8.19 SYSTEM INFORMATION CHANGE INDICATION10.2.49 TRANSPORT CHANNEL RECONFIGURATION COMPLETE10.2.51 TRANSPORT CHANNEL RECONFIGURATION FAILURE10.2.52 TRANSPORT FORMAT COMBINATION CONTROL FAILURE10.2.54 UE CAPABILITY INFORMATION10.2.56 UPLINK DIRECT TRANSFER10.2.58 URA UPDATE10.2.60 UTRAN MOBILITY INFORMATION CONFIRM10.2.63 UTRAN MOBILITY INFORMATION FAILURE10.2.64
None	SYSTEM INFORMATION10.2.48 First Segment10.2.48.1 Subsequent or last Segment10.2.48.3

Type	Message
	Complete SIB10.2.48.5 SIB content10.2.48.8.1

NOTE 1: For the SYSTEM INFORMATION message protocol extensions are only possible at the level of system information blocks. If extension is needed at the level of SYSTEM INFORMATION, another message should be defined.

The "Extensions and criticality" may include both critical and non- critical extensions. Within the encoded message, the critical extensions shall always appear before non-critical extensions.

NOTE 2: The above implies that a UE may stop decoding upon the first not comprehended IE it encounters.

The UE shall comprehend all information elements within a message upto the revision of the protocol it supports for the concerned message.

10.2.4 ASSISTANCE DATA DELIVERY

This message is sent by UTRAN to convey UP assistance data to the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
~~Assistance data~~Measurement Information elements				
UP OTDOA assistance data	OP		UP OTDOA assistance data 10.3.7.103	
UP GPS assistance data	OP		UP GPS assistance data 10.3.7.90	

10.2.5 CELL CHANGE ORDER FROM UTRAN

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
Integrity check info	CH		Integrity check info 10.3.3.16	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over
>RAB info	MP		RAB info 10.3.4.8	
Target cell description	MP			
>CHOICE *Radio Access Technology*	MP			At least one spare choice, Criticality: Reject, is needed.
>>GSM				
>>> BSIC	MP		BSIC 10.3.8.2	
>>>BCCH ARFCN	MP		Integer (0..1023)	GSM TS 05.05~~04.18~~
>>>NC mode	OP		Bitstring(3)	GSM TS 04.18
>>IS-2000				

10.2.62 UTRAN MOBILITY INFORMATION

This message is used by UTRAN to allocate a new RNTI and to convey other UTRAN mobility related information to a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
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 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
UE Timers and constants in connected mode	OP~~MD~~		UE Timers and constants in connected mode 10.3.3.43	~~Default value means that for all timers and constants~~ ~~- For parameters with need MD, the defaults specified in 10.3.3.43 apply and~~ ~~- For parameters with need OP, the parameters are absent~~
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
UTRAN Information Elements				
URA identity	OP		URA identity 10.3.2.6	
RB Information elements				
RB with PDCP information list	OP	1 to <maxRBallRABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

10.3.3.13 Failure cause

Cause for failure to perform the requested procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	MP		Enumerated (configuration unsupported, physical channel failure, incompatible simultaneous reconfiguration, protocol error, compressed mode runtime error, cell update occurred~~reselection~~, invalid configuration, configuration incomplete, unsupported measurement)	At least one spare value needed.

10.3.3.43 UE Timers and Constants in connected mode

This information element specifies timer- and constants values used by the UE in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T301	MD		Integer(100, 200 .. 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 2000. This IE should not be used by the UE in this release of the protocol.
N301	MD		Integer(0.. 7)	Default value is 2. This IE should not be used by the UE in this release of the protocol.
T302	MD		Integer(100, 200... 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 4000.
N302	MD		Integer(0.. 7)	Default value is 3.
T304	MD		Integer(100, 200, 400, 1000, 2000)	Value in milliseconds. Default value is 2000. At least one spare value is needed. ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
N304	MD		Integer(0.. 7)	Default value is 2 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
T305	MD		Integer(5, 10, 30, 60, 120, 360, 720, infinity)	Value in minutes. Default value is 30. Infinity means no update
T307	MD		Integer(5, 10, 15, 20, 30, 40, 50)	Value in seconds. Default value is 30.
T308	MD		Integer(40, 80, 160, 320)	Value in milliseconds. Default value is 160 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
T309	MD		Integer(1… 8)	Value in seconds. Default value is 5 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
T310	MD		Integer(40 .. 320 by step of 40)	Value in milliseconds. Default value is 160 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
N310	MD		Integer(0 .. 7)	Default value is 4 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
T311	MD		Integer(250 .. 2000	Value in milliseconds. Default value is 2000 ~~the actual value~~

			by step of 250)	~~of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
T312	MD		Integer (0..15)	Value in seconds. Default value is 1.
N312	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1.
T313	MD		Integer (0..15)	Value in seconds. Default value is 3 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
N313	MD		Integer (1, 2, 4, 10, 20, 50, 100, 200)	Default value is 20 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
T314	MD		Integer(0, 2, 4, 6, 8, 12, 16, 20)	Value in seconds. Default value is 12 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
T315	MD		Integer (0,10, 30, 60, 180, 600, 1200, 1800)	Value in seconds. Default value is 180 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
N315	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1 ~~the actual value of the equivalent parameter in IE "UE timers and Constants in CELL_DCH" received within SIB1~~. Note 1.
T316	MD		Integer(0, 10, 20, 30, 40, 50, infinity)	Value in seconds. Default value is 30~~XX~~.
T317	MD		Integer (0,10, 30, 60, 180, 600, 1200, 1800)	Value in seconds Default value is 180~~XX~~

NOTE 1: If the value of SIB1 changes, the UE shall re-read SIB1 and use the new value of the parameter, if modified.

10.3.4.16 RB identity

An identification number for the radio bearer affected by a certain message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		Integer(1..32)	Values ~~0~~1-4 shall only be used for signalling radio bearers. The IE value minus one shall be used as BEARER in the ciphering algorithm.

10.3.4.24 Signalling RB information to setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MD		RB identity 10.3.4.16	Default value is specified in subclause 8.6.4.4
CHOICE *RLC info type*	MP			
>RLC info	~~OP~~		RLC info 10.3.4.23	
>Same as RB			RB identity 10.3.4.16	Identity of RB with exactly the same RLC info IE values
RB mapping info	MP		RB mapping info 10.3.4.21	

NOTE This information element is included within IE "Predefined RB configuration"

10.3.4.25 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 and transparent 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		Integer(50,60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 300, 400, 500, 700, 900)	Elapsed time in milliseconds. It is used to trigger the retransmission of a STATUS PDU containing an MRW SUFI field
>>Timer_discard	MP		Integer(100, 250, 500, 750, 1000, 1250, 1500, 1750, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 7500)	Elapsed time in milliseconds before a SDU is discarded.
>>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
>Timer based no explicit				
>>Timer_discard	MP		Integer(10,20,30,40,50,60,70,80,90,100)	Elapsed time in milliseconds 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, 140, 160, 180, 200, 300, 400, 500, 700, 900)	Elapsed time in milliseconds. It is used to trigger the retransmission of a STATUS PDU containing an MRW SUFI field
>>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
>No discard				
>> Max_DAT	MP		Integer(1, 2,	Number of retransmissions of

			3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40)	a PU before the RLC entity is reset.

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"

10.3.6.28 Downlink information for each radio link Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info post 10.3.6.58	
Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL Post 10.3.6.19	

10.3.6.29 ~~Downlink Outer Loop Control~~Void

~~This information element indicates whether the UE is allowed or not to increase its downlink SIR target value above the current value.~~

~~Information Element/Group name~~	~~Need~~	~~Multi~~	~~Type and reference~~	~~Semantics description~~
~~DL Outer loop control~~	~~MP~~		~~Enumerated(Increase allowed, Increase not allowed)~~	

10.3.6.49 PICH Info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Channelisation code	MP		Integer(0..255)	SF is fixed and equal to 256
>>Number of PI per frame	MP		Integer (18, 36, 72, 144)	
>>STTD indicator	MP		STTD Indicator 10.3.6.78	
>TDD				
>>Channelisation code	MD		Enumerated ((16/1)...(16/16))	Default value is the channelisation code used by the SCCPCH carrying the associated PCH.
>>Timeslot number	MD		Timeslot number 10.3.6.84	Default value is the timeslot used by the SCCPCH carrying the associated PCH.
>> CHOICE Burst Type	MP			
>>>Type 1				
>>>>Midamble Shift	MP		Integer(0..15)	
>>>Type 2				
>>>>Midamble Shift	MP		Integer(0..5)	
>>Repetition period/length	MD		Enumerated((4/2),(8/2), (8/4),(16/2), (16/4), (32/2),(32/4), (64/2),(64/4))	Default value is "(64/2)".
>>Offset	MP		Integer (0...Repetition period -1)	SFN mod Repetitionperiod = Offset.
>>Paging indicator length	MD		Integer (4, 8, 16)	Indicates the length of one paging indicator in Bits. Default value is 4.
>>N_{GAP}	MD		Integer(2, 4, 8)	Number of frames between the last frame carrying PICH for this Paging Occasion and the first frame carrying paging messages for this Paging Occasion. Default value is 4.
>>N_{PCH}	MD		Integer(1 .. 8)	Number of paging groups. Default value is 2.

10.3.7.23 Inter-RAT cell info list

Contains the measurement object information for an inter-RAT measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Inter-RAT cell removal	MP			
>Remove all inter-RAT cells				No data
>Remove some inter-RAT cells				
>>Removed inter-RAT cells	MP	1 to <maxCellMeas>		
>>>Inter-RAT cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no inter-RAT cells				
New inter-RAT cells	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	MD		Integer(0 .. <maxCellMeas> - 1)	The first inter-RAT cell in the list corresponds to inter-RAT cell id 0, the second corresponds to inter-RAT cell id 1 etc.
>CHOICE *Radio Access Technology*	MP			
>>GSM				
>>>Cell selection and re-selection info	CV-BCHopt		Cell selection and re-selection info for SIB11/12 10.3.2.4	Only when sent in system information. If HCS is not used and all the parameters in cell selection and re-selection info are default values, this IE is absent.
>>>BSIC	MP		BSIC 10.3.8.2	
>>>BCCH ARFCN	MP		Integer (0..1023)	GSM TS 05.05~~04.18~~
>>>Output power	OP			
>>IS-2000				
>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Section 3. 7.3.3.2.27, *Candidate Frequency Neighbour List Message*

10.3.7.26 Inter-RAT measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT measurement results	OP	1 to <maxOtherRAT>		
>CHOICE system				At least one spare value needed
>>GSM				
>>>Measured GSM cells	MP	1 to <maxReportedGSMCells>		
>>>>GSM carrier RSSI	OP		bit string(6)	RXLEV, GSM TS 05.08
>>>>Pathloss	OP		Integer(46..158)	In dB
>>>>CHOICE BSIC	MP			
>>>>>Verified BSIC				
>>>>>> inter-RAT cell id			Integer(0..<maxCellMeas>)	
>>>>>Non verified BSIC				
>>>>>>BCCH ARFCN			Integer (0..1023)	GSM TS 05.05~~04.18~~
>>>>Observed time difference to GSM cell	OP		Observed time difference to GSM cell 10.3.7.52	

10.3.7.28 Inter-RAT measurement event results

This IE contains the measurement event results that are reported to UTRAN for inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT event identity	MP		Inter-RAT event identity 10.3.7.24	
Cells to report	MP	1 to <maxCellMeas>		
>CHOICE BSIC	MP			
>>Verified BSIC				
>>>inter-RAT cell id			Integer(0..<maxCellMeas>)	
>>Non verified BSIC				
>>>BCCH ARFCN			Integer (0..1023)	GSM TS 05.05~~04.18~~

11.2 PDU definitions

```
-- ***************************************************
--
-- Assistance Data Delivery
--
-- ***************************************************

AssistanceDataDelivery-r3 ::= CHOICE {
    r3                              SEQUENCE {
        assistanceDataDelivery-r3       AssistanceDataDelivery-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

AssistanceDataDelivery-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    --Assistance DataMeasurement Information Elements
    up-GPS-AssistanceData           UP-GPS-AssistanceData               OPTIONAL,
    up-OTDOA-AssistanceData     UP-OTDOA-AssistanceData         OPTIONAL
}
```

11.3 Information element definitions

```
-- ***************************************************
--
--      USER EQUIPMENT INFORMATION ELEMENTS (10.3.3)
--
-- ***************************************************

FailureCauseWithProtErr ::=         CHOICE {
    configurationUnsupported            NULL,
    physicalChannelFailure              NULL,
    incompatibleSimultaneousReconfiguration
                                        NULL,
    compressedModeRuntimeError          TGPSI,
    protocolError                       ProtocolErrorInformation,
    cellUpdateOccurred~~Reselection~~                   NULL,
    invalidConfiguration                NULL,
    configurationIncomplete             NULL,
    unsupportedMeasurement              NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL,
    spare5                              NULL,
    spare6                              NULL,
    spare7                              NULL
}


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

UE-ConnTimersAndConstants ::=       SEQUENCE {
-- Optional is used also for parameters for which the default value is the last one read in SIB1
-- t-301 and n-301 should not be used by the UE in this release of the protocol
    t-301                               T-301                               DEFAULT ms2000,
    n-301                               N-301                               DEFAULT 2,
    t-302                               T-302                               DEFAULT ms4000,
    n-302                               N-302                               DEFAULT 3,
    t-304                               T-304                               ~~OPTIONAL~~DEFAULT ms2000,
    n-304                               N-304                               ~~OPTIONAL~~DEFAULT 2,
    t-305                               T-305                               DEFAULT m30,
    t-307                               T-307                               DEFAULT s30,
    t-308                               T-308                               ~~OPTIONAL~~DEFAULT ms160,
    t-309                               T-309                               ~~OPTIONAL~~DEFAULT 5,
    t-310                               T-310                               DEFAULT ms160,
    n-310                               N-310                               DEFAULT 4,
    t-311                               T-311                               DEFAULT ms2000,
    t-312                               T-312                               DEFAULT 1,
    n-312                               N-312                               DEFAULT s1,
    t-313                               T-313                               ~~OPTIONAL~~DEFAULT 3,
    n-313                               N-313                               ~~OPTIONAL~~DEFAULT s20,
    t-314                               T-314                               ~~OPTIONAL~~DEFAULT s12,
    t-315                               T-315                               ~~OPTIONAL~~DEFAULT s180,
    n-315                               N-315                               ~~OPTIONAL~~DEFAULT s1,
    t-316                               T-316                               ~~OPTIONAL~~DEFAULT s30,
    t-317                               T-317                               ~~OPTIONAL~~DEFAULT s180
}


-- ***************************************************
--
--      RADIO BEARER INFORMATION ELEMENTS (10.3.4)
--
-- ***************************************************

RB-InformationSetup ::=             SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info                           OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}

RLC-InfoChoice ::=                  CHOICE {
```

```
    rlc-Info                            RLC-Info,
    same-as-RB                          RB-Identity
}

RLC-Info ::=                        SEQUENCE {
    ul-RLC-Mode                         UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode                         DL-RLC-Mode                         OPTIONAL
}


SRB-InformationSetup ::=            SEQUENCE {
    rb-Identity                         RB-Identity                         OPTIONAL,
    -- The default value for the IE above is the smallest value not used yet.
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}




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

ReceivedMessageType ::=             ENUMERATED {
                                        activeSetUpdate,
                                        cellUpdateConfirm,
                                        counterCheck,
                                        downlinkDirectTransfer,
                                        interRATHandoverCommand,
                                        measurementControl,
                                        pagingType2,
                                        physicalChannelReconfiguration,
                                        physicalSharedChannelAllocation,
                                        radioBearerReconfiguration,
                                        radioBearerRelease,
                                        radioBearerSetup,
                                        rrcConnectionRelease,
                                        rrcConnectionReject,
                                        rrcConnectionSetup,
                                        securityModeCommand,
                                        signallingConnectionRelease,
                                        transportChannelReconfiguration,
                                        transportFormatCombinationControl,
                                        ueCapabilityEnquiry,
                                        ueCapabilityInformationConfirm,
                                        uplinkPhysicalChannelControl,
                                        uraUpdateConfirm,
                                        utranMobilityInformation,
                                        assistanceDataDelivery,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7
}

SysInfoType1 ::=                    SEQUENCE {
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants           OPTIONAL,
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants           OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}
```

13 Protocol timers, counters and other parameters

The information provided in subclauses 13.1 and 13.2 shall be treated as informative. The normative text is specified in the relevant subclauses in clause 8 and clause 8 shall prevail.

13.1 Timers for UE

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

Timer	Start	Stop	At expiry
T315	When the criteria for radio link failure are fulfilled. The timer is started only if radio bearer(s) which are associated with T315 exist.	When the Cell Update procedure has been completed.	See subclause 8.3.1.14
T316	When the UE detects "out of service area" in URA_PCH or CELL_PCH state	When the UE detects "in service area".	Initiate cell update procedure
T317	When the T316 expires and the UE detects "out of service area".	When the UE detects "in service area".	Transit to idle mode

13.2 Counters for UE

Counter	Reset	Incremented	When reaching max value
V300	When initiating the procedure RRC connection establishment	Upon expiry of T300.	When V300 > N300, the UE enters idle mode.
V302	When initiating the procedure Cell update or URA update	Upon expiry of T302	When V302 > N302 the UE enters idle mode.
V304	When sending the first UE CAPABILITY INFORMATION message.	Upon expiry of T304	When V304 > N304 the UE initiates the Cell update procedure
V308	When sending the first RRC CONNECTION RELEASE COMPLETE message in a RRC connection release procedure.	Upon expiry of T308	When V308 > N308 the UE stops re-transmitting the RRC CONNECTION RELEASE COMPLETE message.
V310	When sending the first PUSCH CAPACITY REQUEST message in a PUSCH capacity request procedure	Upon expiry of T310	When V310 > N310 the UE stops re-transmitting the PUSCH CAPACITY REQUEST message.

13.3 UE constants and parameters

Constant	Usage
N300	Maximum number of retransmissions of the RRC CONNECTION REQUEST message
N302	Maximum number of retransmissions of the CELL UPDATE message
N304	Maximum number of retransmissions of the UE CAPABILITY INFORMATION message
N308	Maximum number of retransmissions of the RRC CONNECTION RELEASE COMPLETE message
N310	Maximum number of retransmission of the PUSCH CAPACITY REQUEST message
N312	Maximum number of successive "in sync" received from L1.
N313	Maximum number of successive "out of sync" received from L1.
N315	Maximum number of successive "in sync" received from L1 during T313 is activated.

13.4 UE variables

13.4.a CELL_UPDATE_STARTED

This variable indicates whether a cell update or URA update procedure is in progress.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell update started	MP		Boolean	TRUE means a cell or URA update procedure is in progress.

13.4.1 CIPHERING_STATUS

This variable contains information about the current status of ciphering in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Status	MP		Enumerated(Not started, Started)	
Reconfiguration	MP		Boolean	TRUE means a reconfiguration of ciphering is ongoing.

13.4.2 COMPRESSED_MODE_ERROR

This variable contains information on whether the received compressed mode configuration from the UTRAN has resulted in an illegal overlap causing a runtime error.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
COMPRESSED_MODE_ERROR	MP		Boolean	

13.4.3 C_RNTI

This variable stores the assigned C-RNTI for this UE when in CELL_FACH state.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
C-RNTI	OP		C-RNTI 10.3.3.8	

13.4.4 DOFF

This variable contains the default offset value in the UE. See TS 25.402 for details.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Default DPCH Offset Value (DOFF)	OP		Default DPCH Offset Value, 10.3.6.16	

13.4.5 ESTABLISHED_RABS

This variable is used to store information about the established radio access bearers and signalling radio bearers in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB information	OP	1 to <maxRABsetup>		For each RAB established
>RAB info	MP		RAB info 10.3.4.8	
>RB information	MP	1 to <maxRBperRAB>		For each RB belonging to the RAB
>>RB identity	MP		RB identity 10.3.4.16	
>>Subflow	MP		Integer(0..<maxSubflowcount>)	Reference to the RAB subflow implemented by this RB
>>RB started	MD		Enumerated(stopped, started)	Default value is started
Signalling radio bearer information	~~MP~~OP	1 to < maxSRBsetup>		In the order of RB 0 and upwards
>RB started	MD		Enumerated(stopped, started)	Default value is started

13.4.5a ESTABLISHED_SIGNALLING_CONNECTIONS

This variable is used to store information about established signalling connections.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Signalling connection list	OP	1 to <maxCNdomains>		For each established signalling connection
>Signalling connection identity	MP		CN domain identity 10.3.1.1	

13.4.6 ESTABLISHMENT_CAUSE

This variable is used to store the cause for establishment of a signalling connection received by upper layers, to be used at RRC connection establishment.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Establishment cause	OP		Establishment cause 10.3.3.11	

13.4.7 FAILURE_CAUSE

This variable contains the cause for failure of a UE initiated procedure, to be reported in a retransmitted message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	O~~M~~P		Failure cause 10.3.3.13	

13.4.8 FAILURE_INDICATOR

This variable indicates whether the procedure has failed for a UE initiated procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure indicator	MP		Boolean	TRUE: Procedure has failed

13.4.8a INCOMPATIBLE_SECURITY_RECONFIGURATION

This variable indicates whether an incompatible simultaneous reconfiguration of a security function has been received..

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Incompatible security reconfiguration	MP		Boolean	TRUE: An incompatible simultaneous security reconfiguration has been detected

13.4.9 INITIAL_UE_IDENTITY

In this variable the identity used by the UE when establishing an RRC connection is stored.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Initial UE identity	OP		Initial UE identity 10.3.3.15	

13.4.10 INTEGRITY_PROTECTION_INFO

This variable contains information about the current status of the integrity protection in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Historical status	MP		Enumerated(Never been active, Has been active)	
Status	MP		Enumerated(Not started, Started)	
Reconfiguration	MP		Boolean	TRUE means a reconfiguration of integrity protection is ongoing.
Signalling radio bearer specific integrity protection information	MP	1 to <maxSRBsetup>		Status information for RB#0-4 in that order
> Uplink RRC HFN	MP		Bitstring (28)	
> Downlink RRC HFN	MP		Bitstring (28)	
> Uplink RRC Message sequence number	MP		Integer (0..15)	
> Downlink RRC Message sequence number	MP		Integer (0..15)	

13.4.11 INVALID_CONFIGURATION

This variable indicates whether a received message contained an invalid configuration, by means of invalid values or invalid combinations of information elements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Invalid configuration	MP		Boolean	TRUE: An invalid configuration has been detected

13.4.12 MEASUREMENT_IDENTITY

This variable stores the measurements configured in the UE. For each configured measurement, the information below shall be stored.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MEASUREMENT CONTROL	~~M~~OP		MEASUREMENT CONTROL 10.2.17, System Information Block type 1110.2.48.8.12, System Information Block type 1210.2.48.8.13	Information as contained in these messages.

~~13.4.13 ORDERED_ASU~~Void

~~NOTE: For FDD only.~~

~~This variable stores information about an ordered, but not yet executed, update of active set.~~

~~Information Element/Group name~~	~~Need~~	~~Multi~~	~~Type and reference~~	~~Semantics description~~
~~ACTIVE SET UPDATE~~	~~MP~~		~~ACTIVE SET UPDATE 10.2.1~~	~~Information as contained in this message.~~

13.4.14 ORDERED_RECONFIGURATION

This variable ~~stores information about an ordered but not yet executed establishment/release/reconfiguration of radio bearers, and/or transport channels and/or physical channels~~ stores information about an ongoing Reconfiguration procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ordered reconfiguration	MP		Boolean	TRUE means that a Reconfiguration procedure is ongoing.
~~**CHOICE** *message*~~	~~MP~~			~~Information as contained in one of the following messages~~
~~>RADIO BEARER SETUP~~			~~RADIO BEARER SETUP10.2.33~~	
~~>RADIO BEARER RECONFIGURATION~~			~~RADIO BEARER RECONFIGURATION10.2.27~~	
~~>RADIO BEARER RELEASE~~			~~RADIO BEARER RELEASE10.2.30~~	
~~>TRANSPORT CHANNEL RECONFIGURATION~~			~~TRANSPORT CHANNEL RECONFIGURATION10.2.50~~	
~~>PHYSICAL CHANNEL RECONFIGURATION~~			~~PHYSICAL CHANNEL RECONFIGURATION10.2.22~~	

13.4.15 PDCP_SN_INFO

This variable contains PDCP receive sequence numbers for one or several radio bearers to be included in a response message to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB with PDCP information list	OP	1 to <maxRBallRABs>		
>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

13.4.16 PROTOCOL_ERROR_INDICATOR

This variable indicates whether there exist a protocol error that is to be reported to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error indicator	MP		Protocol error indicator 10.3.3.27	

13.4.17 PROTOCOL_ERROR_INFORMATION

This variable contains diagnostics to be reported to UTRAN for a message that was not completely understood.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error information	~~M~~OP		Protocol error information 10.3.8.12	

13.4.18 PROTOCOL_ERROR_REJECT

This variable indicates whether there has occurred a severe protocol error causing the ongoing procedure to fail.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error reject	MP		Boolean	TRUE: a severe protocol error has occurred

13.4.19 RB_TIMER_INDICATOR

This variable contains information to be sent to UTRAN if any of the timers T314 or T315 has expired when the UE sends a cell update with cause RL failure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB timer indicator	~~M~~OP		RB timer indicator 10.3.3.28	

13.4.20 RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO

This variable contains information to be sent to UTRAN about when a new ciphering configuration shall be activated in the uplink for radio bearers using RLC-AM or RLC-UM.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB uplink ciphering activation time info	~~M~~OP		RB activation time info 10.3.4.13	

13.4.21 SELECTED_PLMN

This variable contains the type of and identity of the selected PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN Type	MP		PLMN Type 10.3.1.12	
CHOICE *identity type*	MP			
>PLMN identity			PLMN identity 10.3.1.11	
>SID			SID 10.3.9.11	

CHOICE *identity type*	**Condition under which the given *identity type* is chosen**
PLMN identity	PLMN Type is "GSM-MAP"
SID	PLMN Type is "ANSI-41"

13.4.22 START_THRESHOLD

This variable contains information about the maximum allowed value of the START for a CN domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
THRESHOLD	~~M~~OP		Integer (0..1048576)	20 bits

13.4.23 START_VALUE_TO_TRANSMIT

This variable contains the value of START for new radio bearer(s) to be transmitted in a response message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
START	OP		START 10.3.3.38	

13.4.24 TFC_SUBSET

This variable contains information about the TFC subset currently applied.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE mode	MP			
>FDD				
>>Current TFC subset	MP		Transport Format Combination Subset 10.3.5.22	
>>Duration	OP		TFC Control duration 10.3.6.80	
>>Default TFC subset	OP		Transport Format Combination Subset 10.3.5.22	The TFC subset to go back to when any temporary limitation is released
>TDD				
>>TFCS list		1 to < maxCCTrCH >		
>>>TFCS identity	MP			
>>>Current TFC subset	MP		Transport Format Combination Subset 10.3.5.22	
>>>>Duration	OP		TFC Control duration 10.3.6.80	
>>>>Default TFC subset	OP		Transport Format Combination Subset 10.3.5.22	The TFC subset to go back to when any temporary limitation is released

13.4.25 TGPS_IDENTITY

This variable contains the configuration parameters of a compressed mode transmission gap pattern sequence

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPS_IDENTITY	~~M~~OP		DPCH compressed mode info 10.3.6.33	Information as contained in the IE group "Transmission gap pattern sequence configuration parameters".

13.4.26 TGSN_REPORTED

This variable specifies whether an IE "Proposed TGSN" was reported to the UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Proposed TGSN reported	MP		Boolean	

13.4.27 TRANSACTIONS

This variable stores the identifications of the ongoing RRC procedure transactions.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Accepted transactions	OP	1 to <maxtransactions>		~~Maximum one accepted transaction per downlink message type may be stored – each message type may appear only once in the list.~~
>Message type	MP		Message Type	
>RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Rejected transactions	OP	1 to <maxtransactions>		~~Maximum one rejected transaction per downlink message type may be stored – each message type may appear only once in the list.~~
>Message type	MP		Message Type	
>RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	

13.4.28 UE_CAPABILITY_TRANSFERRED

This variable stores information about which UE capabilities that have been transferred to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE radio access capability	OP		UE radio access capability 10.3.3.42	
UE system specific capability	OP		Inter-RAT message 10.3.8.8	Includes inter-RAT classmark

13.4.29 UNSUPPORTED_CONFIGURATION

This variable indicates whether a received message contained a configuration, that is not supported by the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Unsupported configuration	MP		Boolean	TRUE: An unsupported configuration has been detected

13.4.30 URA_IDENTITY

This variable stores the assigned URA identity for this UE when in URA_PCH state.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
URA identity	OP		URA identity 10.3.2.6	

13.4.31 U_RNTI

This variable stores the assigned U-RNTI for this UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
U-RNTI	MP		U-RNTI 10.3.3.47	

13.4.32 VALUE_TAG

This variable contains information about the value tag for the last received system information block of a given type, for all system information blocks using value tags.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB value tag	MP		MIB value tag 10.3.8.9	Value tag for the master information block
SB 1 value tag	MP		Cell value tag 10.3.8.4	Value tag for the scheduling block type 1
SB 2 value tag	MP		Cell value tag 10.3.8.4	Value tag for the scheduling block type 2
SIB 1 value tag	CV-*GSM*		PLMN value tag 10.3.8.10	Value tag for the system information block type 1
SIB 2 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 2
SIB 3 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 3
SIB 4 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 4
SIB 5 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 5
SIB 6 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 6
CHOICE *mode*				
>FDD				
>>SIB 8 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 8
>TDD				(no data)
SIB 11 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 11
SIB 12 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 12
SIB 13 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13
SIB 13.1 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.1
SIB 13.2 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.2
SIB 13.3 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.3
SIB 13.4 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.4
SIB 15 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15
SIB 15.1 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15.1
SIB 15.2 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15.2
SIB 15.3 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15.3
SIB 16 value tag	MP		PLMN value tag 10.3.8.10	Value tag for the system information block type 16

Condition	Explanation
GSM	This information is only stored when the PLMN Type in the variable SELECTED_PLMN is "GSM-MAP".
ANSI	This information is only stored when the PLMN Type in the variable SELECTED_PLMN is "ANSI-41".

3GPP TSG-RAN WG2 Meeting #18
Edinburgh, UK, 15 - 19 January 2001

Tdoc R2-010382

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**661**	⌘ rev	**-**	⌘ Current version:	**3.5.0**	⌘

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

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

Title:	⌘	Corrections to compressed mode pattern sequence handling		
Source:	⌘	TSG-RAN WG2		
Work item code:	⌘		***Date:*** ⌘	2001-02-18
Category:	⌘	**F**	***Release:*** ⌘	R99

Use one of the following categories:
*   **F** (essential correction)*
*   **A** (corresponds to a correction in an earlier release)*
*   **B** (Addition of feature),*
*   **C** (Functional modification of feature)*
*   **D** (Editorial modification)*

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

Use one of the following releases:

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

Reason for change: ⌘

Currently, RRC procedures transmission gap pattern sequence handling rely on that deactivation, followed by a possible reconfiguration and re-activation of a pattern sequence is performed at the same CFN (the TGCFN of a pattern sequence). If several pattern sequences are active and reconfigured, this means that to avoid overlapping gaps during the reconfiguration period (where both 'old' and 'new' pattern sequences are active), only a limited number of CFNs are possible to use for deactivation/re-configuration/re-activation (i.e. at TGCFN) of pattern sequences.

In order to avoid possibly overlapping pattern gaps during the reconfiguration period, ongoing patterns need e.g. first be deactivated in one RRC message, followed by reconfiguration and activation of patterns in a second RRC message.

This CR introduces support to deactivate a transmission gap pattern sequence at one CFN, then reconfigure and re-activate the pattern sequence at a another CFN using one single RRC message.

NBAP (TS 25.433) and RNSAP (TS 25.423) support the described pattern sequence handling using a single procedure.

Summary of change:	⌘	New IE “TGPS reconfiguration CFN” is introduced in IE “DPCH compressed mode status info”. Already active patterns are deactivated at that CFN. Patterns that not listed in IE “DPCH compressed mode status info”are not affected At reception of IE “DPCH compressed mode info”, already active patterns are stopped at CFN indicated by IE “Activation time” received in the message. Pattern sequences not listed in IE “DPCH compressed mode info” or IE “DPCH compressed mode status info” are not affected. In IE “DPCH compressed mode info” and IE “DPCH compressed mode status info”, IE “TGCFN” is only present for a pattern sequence that shall be activated. Editorial indentation error is corrected in subclause 8.4.1.3. Editorial change to descriptive text for IE “DPCH compressed mode info” Descriptive text added for IE “DPCH compressed mode status info” IE “TGPS status flag” is added to variable TGPS_IDENTITY.
Consequences if not approved:	⌘	Instead of using a single RRC procedure for modifying TGPS configuration, several consecutive RRC procedures are needed to avoid possible overlapping patterns. This slows down the total time for modifying a TGPS configuration. Furthermore, functionality supported in NBAP and RNSAP procedures cannot be utilised.

Clauses affected:	⌘	8.4.1.3, 8.6.6.15, 10.3.6.33, 10.3.6.34, 11.3, 13.4.25		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in subclause 8.6 unless otherwise specified below.

The UE shall:

- read the IE "Measurement command";
- if the IE "measurement command" has the value "setup":
    - store this measurement in the variable MEASUREMENT_IDENTITY according to the IE "measurement identity";
    - store into the variable MEASUREMENT_IDENTITY the control information defined by IE "Measurement object", the IE "Measurement quantity", the IE "Reporting quantity", the IE "Measurement reporting criteria", the IE "Measurement validity", the IE "Reporting mode" and if present all IEs "Additional measurement identity", which are valid for this measurement type; and
    - for measurement types "inter-RAT measurement" or "inter-frequency measurement":
        - begin measurements according to the stored control information for this measurement identity optionally with the use of compressed mode if at least one compressed mode pattern sequence is simultaneously activated with inclusion of the IE "DPCH compressed mode status info"; or
    - for any other measurement type:
        - begin measurements according to the stored control information for this measurement identity.
    - if the IE "Measurement command" has the value "modify":
        - retrieve the stored measurement information in variable MEASUREMENT_IDENTITY associated with the identity indicated by the IE "measurement identity";
        - if any of IE "measurement quantity", IE "reporting quantity", IE "measurement reporting criteria", IE "measurement validity", IE "reporting mode" or IE "Additional measurement identity" are present in the MEASUREMENT CONTROL message, the control information defined by these IEs shall replace the corresponding stored information in variable MEASUREMENT_IDENTITY;
        - store the new set of IEs and associate them with the measurement identity;
        - resume the measurements according to the new stored measurement control information.
- if the IE "measurement command has the value "release":
    - terminate the measurement associated with the identity given in the IE "measurement identity";
    - clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY.
- if the IE "DPCH Compressed Mode Status Info" is present, the UE shall:
    - if pattern sequence corresponding to IE "TGPSI" is already active (according to “TGPS Status Flag”), deactivate this pattern sequence at the beginning of the frame indicated by IE “TGPS reconfiguration CFN” received in the message;
    - after the time indicated by IE “TGPS reconfiguration CFN” has elapsed, activate the pattern sequence stored in the variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "active~~ate~~" at the time indicated by IE "TGCFN" and begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence~~;~~ If the values of IE “TGPS reconfiguration CFN” and IE “TGCFN” are equal, the concerned pattern sequence shall be started immediately at that CFN.
    - ~~deactivate the pattern sequence stored in variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "deactivate" and terminate the inter-frequency and/or inter-RAT~~

~~measurements corresponding to the pattern sequence measurement purpose of each deactivated pattern sequence;~~

Pattern sequeneces stored in variable TGPS_IDENTITY, but not identitifed in IE "TGPSI" shall not be affected.

- (HANS: TAB ERROR, paragraph has been moved one step to the left)clear the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS.
- and the procedure ends.

8.6.6.15 DPCH Compressed mode info

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" ~~are~~ is included, the UE shall:

- if pattern sequence corresponding to IE "TGPSI" is already active (according to “TGPS Status Flag”), deactivate this pattern sequence at the beginning of the frame, indicated by IE “Activation time”(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use;
- update each pattern sequence to the variable TGPS_IDENTITY according to the IE "TGPSI";
- update into the variable TGPS_IDENTITY the configuration information defined by IE group "transmission gap pattern sequence configuration parameters";
- after the new configuration has been taken into use, activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activ~~ate~~e" at the time indicated by IE "TGCFN" and begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence.~~;~~ If the new configuration is taken into use at the same CFN as indicated by IE "TGCFN", the concerned pattern sequence shall be started immediately at that CFN.
- monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified in subclause 8.2.11.2;

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is not included, the UE shall:

- if pattern sequence corresponding to IE "TGPSI" is already active (according to “TGPS Status Flag”), deactivate this pattern sequence at the beginning of the frame, indicated by IE “Activation time”(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use;
- after the new configuration has been taken into use, activate, at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activ~~ate~~e" and begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence. . If the new configuration is taken into use at the same CFN as indicated by IE "TGCFN", the concerned pattern sequence shall be started immediately at that CFN.~~;~~
- ~~deactivate, at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "deactivate" and terminate the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each deactivated pattern sequence;~~

Pattern sequeneces stored in variable TGPS_IDENTITY, but not identitifed in IE "TGPSI" shall not be affected.

10.3.6.33 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 and inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence		1 to <maxTGPS>		
>TGPSI	MP		TGPSI 10.3.6.82	
>TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be activated or deactivated.
>TGCFN	~~MP~~CV Active		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.
>Transmission gap pattern sequence configuration parameters	OP			
>>TGMP	MP		Enumerated(TDD measurement, FDD measurement, GSM carrier RSSI measurement, GSM Initial BSIC identification, GSM BSIC re-confirmation)	Transmission Gap pattern sequence Measurement Purpose.
>>TGPRC	MP		Integer (1..63, Infinity)	The number of transmission gap patterns within the Transmission Gap Pattern Sequence.
>> TGSN	MP		Integer (0..14)	Transmission Gap Starting Slot Number The slot number of the first transmission gap slot within the TGCFN.

>>TGL1	MP		Integer(1..14)	The length of the first Transmission Gap within the transmission gap pattern expressed in number of slots
>> TGL2	MD		Integer (1..14)	The length of the second Transmission Gap within the transmission gap pattern. If omitted, then TGL2=TGL1.
>>TGD	MP		Integer(15..269, undefined)	Transmission gap distance indicates the number of slots between starting slots of two consecutive transmission gaps within a transmission gap pattern. If there is only one transmission gap in the transmission gap pattern, this parameter shall be set to zero.
>> TGPL1	MP		Integer (1..144)	The duration of transmission gap pattern 1.
>> TGPL2	MD		Integer (1..144)	The duration of transmission gap pattern 2. If omitted, then TGPL2=TGPL1.
>>RPP	MP		Enumerated (mode 0, mode 1).	Recovery Period Power control mode during the frame after the transmission gap within the compressed frame. Indicates whether normal PC mode or compressed PC mode is applied
>>ITP	MP		Enumerated (mode 0, mode 1).	Initial Transmit Power is the uplink power control method to be used to compute the initial transmit power after the compressed mode gap.
>>UL/DL mode	MP		Enumerated (UL only, DL only, UL/DL)	Defines whether only DL, only UL, or combined UL/DL compressed mode is used.
>> Downlink compressed mode method	CV DL		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap
>> Uplink compressed mode method	CV UL		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>Downlink frame type	MP		Enumerated (A, B)	
>>DeltaSIR1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the first transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase)
>>DeltaSIRafter1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the first transmission gap in the transmission gap pattern.

>>DeltaSIR2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the second transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) When omitted, DeltaSIR2 = DeltaSIR1.
>>DeltaSIRafter2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the second transmission gap in the transmission gap pattern. When omitted, DeltaSIRafter2 = DeltaSIRafter1.

Condition	Explanation
Active	This information element is only sent when the value of the "TGPS Status Flag" IE is "Active".
UL	This information element is only sent when the value of the "UL/DL mode" IE is "UL only" or "UL/DL".
DL	This information element is only sent when the value of the "UL/DL mode" IE is "DL only" or "UL/DL".

10.3.6.34 DPCH Compressed Mode Status Info

This information element indicates status information of the compressed mode used by the UE in order to perform inter-frequency and inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPS reconfiguration CFN	MP		Integer (0..255)	Connection Frame Number of the frame where already active Transmission Gap Pattern Sequences shall be deactivated
Transmission gap pattern sequence		1 to <maxTGPS>		
> TGPSI	MP		TGPSI 10.3.6.82	Transmission Gap Pattern Sequence Identifier
> TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be active or inactive.
>TGCFN	~~MP~~CV Active		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.

Condition	Explanation
Active	This information element is only sent when the value of the "TGPS Status Flag" IE is "Active".

11.3 Information element definitions

:

```
TGP-Sequence ::=                    SEQUENCE {
    tgpsi                               TGPSI,
    tgps-StatusFlag                     CHOICE {TGPS-StatusFlag,
        activate
            tgcfn                               TGCFN,
        deactivate                          NULL
    },
    tgps-ConfigurationParams            TGPS-ConfigurationParams            OPTIONAL
}

TGP-SequenceList ::=                SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-Sequence

TGP-SequenceShort ::=               SEQUENCE {
    tgpsi                               TGPSI,
    tgps-StatusFlag                     CHOICE {TGPS-StatusFlag,
        activate
            tgcfn                               TGCFN,
        deactivate                          NULL
    },
}

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,
    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,
    deltaSIR1                           DeltaSIR,
    deltaSIRAfter1                      DeltaSIR,
    deltaSIR2                           DeltaSIR                            OPTIONAL,
    deltaSIRAfter2                      DeltaSIR                            OPTIONAL
}

TGPS-StatusFlag ::=                 ENUMERATED {
                                        tgpsActive, tgpsInactive }
```

13.4.25 TGPS_IDENTITY

This variable contains the configuration parameters of a compressed mode transmission gap pattern sequence

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPS_IDENTITY	MP		DPCH compressed mode info 10.3.6.33	Information as contained in the IE group "Transmission gap pattern sequence configuration parameters".
TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence

3GPP TSG-RAN WG2 Meeting #19
Sophia Antipolis, France, 19-23 February

R2-010383

CR-Form-v3

CHANGE REQUEST

⌘ **25.331**	**CR 662**	⌘ rev	**-**	⌘ Current version:	**3.5.0**	⌘

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

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

Title: ⌘	Inter-system change clarifications
Source: ⌘	TSG-RAN WG2
Work item code: ⌘	
Date: ⌘	2001-02-15
Category: ⌘	**F**
Release: ⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

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

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

Reason for change: ⌘

When an Inter-RAT Handover and an Inter-RAT Cell Change Order From UTRAN does not succeed, these two procedures needs clarification on how to behave when the UE returns to UTRA

Minor corrections in the Inter-RAT Handover and an Inter-RAT Cell Change Order to UTRAN procedures.

In GSM the 850 band has been introduced primarily for countries that also may use the 1900 band. However some countries want to use the 850 and 1800 band with the possibility to make handover between the bands, but the MS is then not able to distinguish between the 1800 and 1900 band in the handover command. Therefor a bit has been introduced in 05.05 (GP-010441) and 04.18 (GP-010404) to indicate if the MS shall interpret the ARFCN numbers as DCS 1800 or PCS 1900.
Because of this the same interpretation should be intoduced in 25.331 for inter-system handover and on UE interpretation of ARFCN.

Summary of change: ⌘

- A clarification is done about the initial power to use upon handover to UTRA in the Inter-RAT handover to UTRAN procedure.
- Align the UE behaviour when the UE fails to complete the requested Inter-RAT Handover from UTRAN and Inter-RAT Cell Change order from UTRAN with the UE behaviour at Radio Link Failure.
- In the Inter-RAT Handover from UTRAN procedure, if the UE does not succeed to establish a connection to the target RAT, and the UE does not succeed to revert back to the UTRA physical channels, a cell update procedure with cause "Radio link failure" is initiated.
- A section regarding unsupported configuration at Inter-RAT Handover From UTRAN is added.
- The Inter-RAT Handover from UTRAN procedure is restricted to be used in CELL_DCH state, since the Inter-RAT cell change order procedure covers the

		CELL_FACH state. - When in state CELL_DCH in the Inter-RAT Cell Change order from UTRAN procedure, the UE does not succeed to establish a connection to the target RAT, and the UE does not succeed to revert back to the UTRA physical channels, a cell update procedure with cause "Radio link failure" is initiated. - When in state CELL_FACH in the Inter-RAT Cell Change order from UTRAN procedure, the UE does not succeed to establish a connection to the target RAT, and the UE does not succeed to revert back to the old UTRA cell, a cell update procedure with cause "cell re-selection" is initiated. - A section regarding invalid Cell Change Order From UTRAN is added. - A section regarding unsupported configuration at Cell Change Order From UTRAN is added. - The RRC transaction identifier is added to the Cell Change Order From UTRAN, and the Cell Change Failure From UTRAN messages. - The message CELL CHANGE FAILURE FROM UTRAN has been renamed to CELL CHANGE ORDER FROM UTRAN FAILURE to make it inline with the other message names. - A part regarding Cell Selection mode is removed in the Inter-RAT cell change order to UTRAN procedure. - The chap. 8.3.7.1 and 8.3.7.3 has been clarified. - For cases when BCCH ARFCN is signalled in HO, cell change order or neighbour lists a band indicator is added. UE behaviour clarified for inter-RAT handover to GSM.
Consequences if not approved:	⌘	The UE may not be able to revert back to UTRAN, after an unsuccessful Cell Change Order from UTRAN procedure, or an Inter-RAT from UTRAN procedure

Clauses affected:	⌘	2, 8.3.6.3, 8.3.6.4, 8.3.7.1, 8.3.7.2, 8.3.7.3, 8.3.7.5, 8.3.7.x (new), 8.3.10.2, 8.3.11, 8.3.11.1, 8.3.11.3, 8.3.11.4, 8.3.11.5, 8.3.11.x (new), 8.3.11.y (new), 10.2.5, 10.2.6, 10.3.7.23, 10.3.8.8, 11.1, 11.2, 11.3
Other specs Affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

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

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

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

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

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

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

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

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

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

[10] 3GPP TS 25.402: "Synchronization in UTRAN, stage 2".

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

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

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

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

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

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

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

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

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

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

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

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

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

[24] 3GPP TS 04.60: "General Packet Radio Service (GPRS), MS-BSS interface; RLC/MAC".

[25] 3GPP TS 04.18: " Mobile radio interface layer 3 specification,Radio Resource Control Protocol ".

8.3.6 Inter-RAT handover to UTRAN

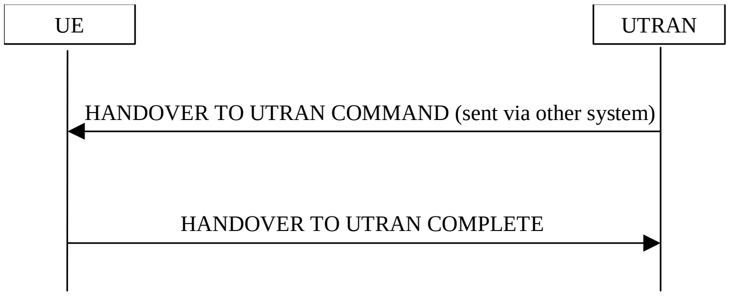


Figure 52: Inter-RAT handover to UTRAN, successful case

8.3.6.1 General

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

8.3.6.2 Initiation

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

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

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

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

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

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

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

8.3.6.3 Reception of HANDOVER TO UTRAN COMMAND message by the UE

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

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

- store a U-RNTI value (32 bits), which is derived by the IEs "SRNC identity" (12 bits) and "S-RNTI 2" (10 bits) included in IE "U-RNTI-short". In order to produce a full size U-RNTI value, a full size "S-RNTI" (20 bits) shall be derived by padding the IE "S-RNTI 2" with 10 zero bits in the most significant positions; and

- if IE "Specification mode" is set to "Preconfiguration":
  - initiate the signalling link, the RB(s) and traffic channel(s) in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity";
  - initiate the physical channels in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity" and the received physical channel information elements;
- if IE "Specification mode" is set to "Complete specification":
  - initiate the RB(s) and traffic channels in accordance with the received radio bearer, transport channel and physical channel information elements;
- perform an open loop estimation to determine the UL transmission power according to 8.5.3, ~~taking into account the received IE "Maximum allowed UL TX power" and move to CELL_DCH state;~~
- apply the same ciphering (ciphered/unciphered, algorithm) as prior to inter--RAT handover, unless a change of algorithm is requested by means of the "Ciphering algorithm".

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

- transmit a HANDOVER TO UTRAN COMPLETE message on the uplink DCCH;
- when of the HANDOVER TO UTRAN COMPLETE message has been submitted to lower layers for transmission, the procedure ends.

8.3.6.4 Invalid Handover to UTRAN command message

If the UE receives a HANDOVER TO UTRAN COMMAND message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling according to the source radio access technology~~as follows:~~

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

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

- If allowed by the source RAT, transmit an RRC STATUS message to the source radio access technology, and include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- Other details may be provided in the specifications related to the source radio access technology.

8.3.6.5 UE fails to perform handover

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

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

8.3.6.6 Reception of message HANDOVER TO UTRAN COMPLETE by the UTRAN

Upon receiving a HANDOVER TO UTRAN COMPLETE message, UTRAN should consider the inter-RAT handover procedure as having been completed successfully and indicate this to the Core Network.

8.3.7 Inter-RAT handover from UTRAN

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

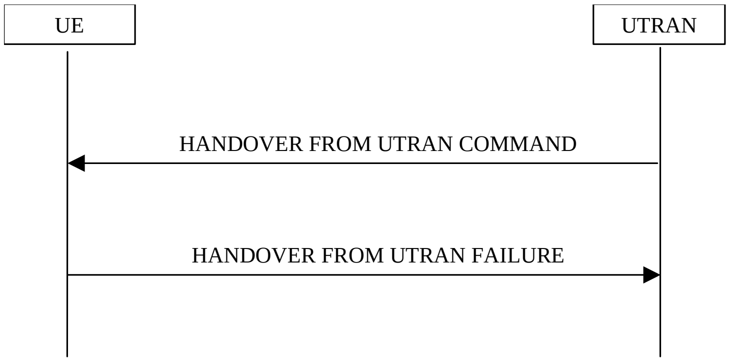


Figure 54: Inter-RAT handover from UTRAN, failure case

8.3.7.1 General

The purpose of the inter-RAT handover procedure is to, under the control of the network, transfer a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH ~~and CELL_FACH~~ states.

NOTE: This procedure is applicable for ~~applies when the UE has (at least one) RAB in use for a~~ CS domain service ~~(speech, Unrestricted Digital Information)~~.

~~The UE does not need to support handovers involving more than one RAB in the CS domain. Furthermore, the UE need not support simultaneous handover of PS domain RABs in addition to the RAB used for CS domain services. Nevertheless, the procedure specification provided in the following covers these cae a UE receives a request for a handover case not supported, it shall apply the procedure in subclause 8.3.7.5~~.

8.3.7.2 Initiation

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

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

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

The UE shall take the following actions:

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

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM (DCS 1800 band used)~~except PCS band~~	GSM TS 04.18, version 8.5.0 or later~~, as if the message was sent on any frequency except in the 1900 band~~	HANDOVER COMMAND
GSM (PCS 1900 band used)~~PCS band~~	GSM TS 04.18, version 8.5.0 or later~~, as if the message was sent was in the 1900 band~~	HANDOVER COMMAND
Cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

- if the IE "System type" has the value "GSM (DCS 1800 band used)", set the BAND_INDICATOR [25] to "ARFCN indicates 1800 band".
- if the IE "System type" has the value " GSM (PCS 1900 band used)", set the BAND_INDICATOR [25] to "ARFCN indicates 1900 band".
- apply the "Inter RAT Message" according to the "standard to apply" in the table above.
- ~~In case IE "RAB info" is not included in the HANDOVER FROM UTRAN COMMAND message, initiate handover for all RABs used by the UE.~~
- In case one or more IEs "RAB info" is included in the HANDOVER FROM UTRAN COMMAND message, connect upper layer entities corresponding to indicated RABs to the radio resources indicated in the inter-RAT message. ~~the initiate handover for the RABs specified within this IE(s). Other RABs used by the UE, if any, shall not be affected.~~
- ~~switch the current connection to the target radio access technology~~.

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

8.3.7.4 Successful completion of the inter-RAT handover

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

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

8.3.7.5 UE fails to complete requested handover

If the UE does not ~~support the requested handover scenario or does not~~ succeed in establishing the connection to the target radio access technology, it shall

- ~~resume the connection to UTRAN using the resources used before receiving the HANDOVER FROM UTRAN COMMAND message; and~~
- ~~set the IE "RRC transaction identifier" in the HANDOVER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and~~
- ~~clear that entry;~~
- ~~set the cause value in IE "failure cause" to "Configuration unacceptable" in case the UE does not support the requested configuration. This case includes the case in which the UE does not support the requested handover scenario e.g. handover including multiple CS domain RABs.~~
- ~~set the cause value in IE "failure cause" to "Physical channel failure" in case the UE did not succeed in establishing the radio connection to the target RAT.~~

~~- transmit the HANDOVER FROM UTRAN FAILURE message on uplink DCCH using AM RLC. When the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission, the procedure ends;~~

- revert back to the UTRA configuration;
- establish the UTRA physical channel(s) used at the time for reception of HANDOVER FROM UTRAN COMMAND;
- if the UE does not succeed to establish the UTRA physical channel(s):
  - select a suitable UTRA cell according to [4];
  - perform a cell update procedure according to subclause 8.3.1 with cause "Radio link failure";
  - when the cell update procedure has completed successfully, proceed as below;
- transmit the HANDOVER FROM UTRAN FAILURE message setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "physical channel failure";
- when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layer for transmission, the procedure ends.

8.3.7.x Unsupported configuration in HANDOVER FROM UTRAN COMMAND message

If the UTRAN instructs the UE to perform a not supported handover scenario e.g. multiple RAB or to use a not supported configuration, the UE shall proceed as follows:

- transmit a HANDOVER FROM UTRAN FAILURE message, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "configuration unacceptable";
  - when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
    - resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received; and
    - the procedure ends.

8.3.7.6 Invalid HANDOVER FROM UTRAN COMMAND message

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

- set the IE "failure cause" to the cause value "Inter-RAT protocol error";
- include the IE "Inter-RAT message" in case the target RAT provides further details about the inter RAT protocol error;
- transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC
- When the transmission of the HANDOVER FROM UTRAN FAILURE message has been confirmed by RLC, the UE shall resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received and the procedure ends.

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

- set the IE "RRC transaction identifier" in the HANDOVER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
  - resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received
  - and the procedure ends.

8.3.7.7 Reception of an HANDOVER FROM UTRAN FAILURE message by UTRAN

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

8.3.10 Inter-RAT cell change order to UTRAN

8.3.10.1 General

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

8.3.10.2 Initiation

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

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

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

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

8.3.10.3 UE fails to complete an inter-RAT cell change order

If the inter-RAT cell reselection fails the UE shall return to the other radio access technology and proceed as specified in the appropriate specifications for that RAT.

NOTE 3: The cell change was network ordered. Therefore, failure to change to the target cell should not cause the UE to move to UE- controlled cell selection

8.3.11 Inter-RAT cell change order from UTRAN

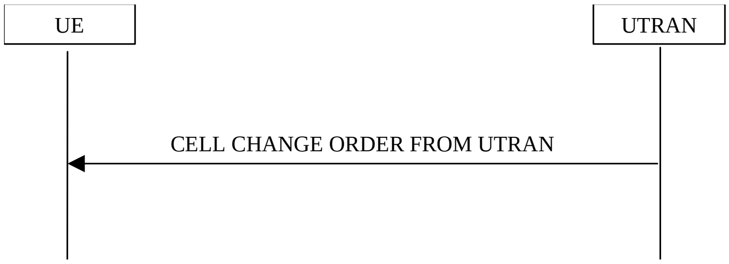


Figure 55: Inter–RAT cell change order from UTRAN

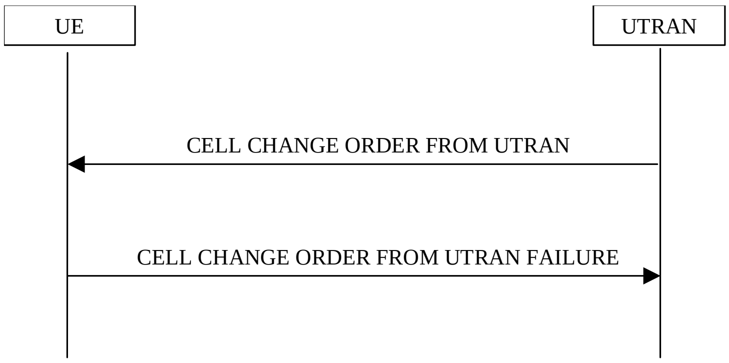


Figure xx: Inter-RAT cell change order from UTRAN, failure case

8.3.11.1 General

The purpose of the inter-RAT cell change order procedure is to transfer, under the control of the network, a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH and CELL_FACH state.

NOTE ~~1~~: This procedure is applicable for services ~~applies when the UE has at least one RAB in use~~ in the PS domain.

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

8.3.11.2 Initiation

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

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

8.3.11.3 Reception of an CELL CHANGE ORDER FROM UTRAN message by the UE

The UE shall take the following actions:

- establish the connection to the other radio access technology, as specified within IE "Target cell info". This IE specifies the target cell identity, in accordance with the specifications for that other RAT. In case the target cell is a GSM/ GPRS cell, IE "Target cell info" may also include IE "NC mode", which specifies the cell selection mode to be applied in the target cell; and

- if IE "NC mode" is not included in the CELL CHANGE ORDER FROM UTRAN:
  - retrieve it from the target cell as specified in 3GPP TS 04.18;
  - act upon IE "NC mode" as specified in 3GPP TS 04.18.

- ~~if IE "RAB info" is not included in the CELL CHANGE ORDER FROM UTRAN message:~~
  - ~~initiate cell change for all RABs used by the UE.~~
- if one or more IEs "RAB info" are included in the CELL CHANGE ORDER FROM UTRAN message, connect the upper layer entities corresponding to indicated RABs to the radio resources offered by the target RAT.~~:~~
  - ~~initiate handover for the RABs specified within this IE(s). Other RABs used by the UE, if any, shall not be affected.~~
- ~~switch the current connection to the other radio access technology.~~

NOTE ~~2~~: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification. In case of GSM/GPRS proceed according to the procedure Network control cell reselection procedure as specified in [24].

8.3.11.4 Successful completion of the cell change order

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

NOTE ~~3~~: The release of the UMTS radio resources is initiated from another RAT.

8.3.11.5 UE fails to complete requested cell change order

~~If the UE does not succeed in establishing the connection to the target RAT, it shall~~

- ~~resume the connection to UTRAN using the resources used before receiving the CELL CHANGE ORDER FROM UTRAN message~~
- ~~transmit the CELL CHANGE FAILURE FROM UTRAN message on uplink DCCH using AM RLC. When the CELL CHANGE FAILURE FROM UTRAN message has been submitted to lower layers for transmission, the procedure ends;~~
- ~~set the cause value as specified within IE "failure cause" as follows:~~
- ~~to " Configuration unacceptable" in case the UE does not support the requested configuration;~~
- ~~to "Physical channel failure" in case the UE did not succeed to establish the radio connection.~~

~~NOTE 4: The cell change was network ordered. Therefore, failure to change to the target cell should not cause the UE to move to UE- controlled cell selection.~~

If the UE does not succeed to establish a connection to the target RAT, proceed as follows:

- If the UE received the CELL CHANGE ORDER FROM UTRAN message in state CELL_DCH, the UE shall:
  - revert back to the UTRA configuration;
  - establish the UTRA physical channel(s) used at the time for reception of CELL CHANGE ORDER FROM UTRAN;
  - if the UE does not succeed to establish the UTRA physical channel(s):
    - select a suitable UTRA cell according to [4];
    - perform a cell update procedure according to subclause 8.3.1 with cause “Radio link failure”;

- when the cell update procedure has completed successfully, proceed as below;

- transmit the CELL CHANGE ORDER FROM UTRAN FAILURE message setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "physical channel failure";
- when the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layer for transmission, the procedure ends.

- If the UE recieves the CELL CHANGE ORDER FROM UTRAN message in CELL_FACH state, the UE shall:
  - revert to the cell it was camped on at the reception of the CELL CHANGE ORDER FROM UTRAN message;
  - if the UE is unable to return to this cell:
    - select a suitable UTRA cell according to [4];
    - initiate the cell update procedure according to subclause 8.3.1 using the cause “cell re-selection”;
    - when the cell update procedure completed successfully, proceed as below;
  - transmit the CELL CHANGE ORDER FROM UTRAN FAILURE message setting the information elements as specified below:
    - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the CELL CHANGE ORDER FROM UTRAN message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - clear that entry;
    - set the IE "Inter-RAT change failure" to "physical channel failure";
  - when the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layer for transmission, the procedure ends.

8.3.11.x Unsupported configuration in CELL CHANGE ORDER FROM UTRAN message

If the UTRAN instructs the UE to perform a not supported cell change order scenario e.g. multiple RAB or to use a not supported configuration, the UE shall proceed as follows:

- transmit a CELL CHANGE ORDER FROM UTRAN FAILURE message, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "configuration unacceptable";
  - when the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:

- resume normal operation as if the CELL CHANGE ORDER FROM UTRAN message has not been received; and
- the procedure ends.

8.3.11.y Invalid CELL CHANGE ORDER FROM UTRAN message

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

- set the IE "RRC transaction identifier" in the CELL CHANGE ORDER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the CELL CHANGE ORDER FROM UTRAN message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- transmit a CELL CHANGE ORDER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
  - resume normal operation as if the invalid CELL CHANGE ORDER FROM UTRAN message has not been received; and
  - the procedure ends.

10.2.5 CELL CHANGE ORDER FROM UTRAN

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
RB Information elements				
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over
>RAB info	MP		RAB info 10.3.4.8	
Other information elements				
Target cell description	MP			
>CHOICE *Radio Access Technology*	MP			At least one spare choice, Criticality: Reject, is needed.
>>GSM				
>>> BSIC	MP		BSIC 10.3.8.2	
>>> Band Indicator	MP		Enumerated (DCS 1800 band used, PCS 1900 band used)	Indicates how to interpret the BCCH ARFCN
>>>BCCH ARFCN	MP		Integer (0..1023)	GSM TS 04.18
>>>NC mode	OP		Bitstring(3)	GSM TS 04.18
>>IS-2000				

10.2.6 CELL CHANGE ~~FAILURE~~ ORDER FROM UTRAN FAILURE

This message is sent on the RRC connection used before the Cell change order from UTRAN was executed. The message indicates that the UE has failed to seize the new channel in the other system.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Other information elements				
Inter-RAT change failure	MD		Inter-RAT change failure 10.3.8.5	

***** Next modified section *****

10.3.7.23 Inter-RAT cell info list

Contains the measurement object information for an inter-RAT measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Inter-RAT cell removal	MP			
>Remove all inter-RAT cells				No data
>Remove some inter-RAT cells				
>>Removed inter-RAT cells	MP	1 to <maxCellMeas>		
>>>Inter-RAT cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no inter-RAT cells				
New inter-RAT cells	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	MD		Integer(0 .. <maxCellMeas> - 1)	The first inter-RAT cell in the list corresponds to inter-RAT cell id 0, the second corresponds to inter-RAT cell id 1 etc.
>CHOICE *Radio Access Technology*	MP			
>>GSM				
>>>Cell selection and re-selection info	CV-BCHopt		Cell selection and re-selection info for SIB11/12 10.3.2.4	Only when sent in system information. If HCS is not used and all the parameters in cell selection and re-selection info are default values, this IE is absent.
>>>BSIC	MP		BSIC 10.3.8.2	
>>>Band indicator	MP		Enumerated (DCS 1800 band used, PCS 1900 band used)	Indicates how to interpret the BCCH ARFCN
>>>BCCH ARFCN	MP		Integer (0..1023)	GSM TS 04.18
>>>Output power	OP			
>>IS-2000				
>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Section 3. 7.3.3.2.27, *Candidate Frequency Neighbour List Message*

***** Next modified section *****

10.3.8.8 Inter-RAT message

This Information Element contains one or several messages that are structured and coded according to the specification used for the system type indicated by the first parameter.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
System type	MP		Enumerated (GSM (DCS 1800 band used) ~~except PCS 1900~~, ~~PCS 1900~~ GSM (PCS 1900 band used), cdma2000)	This IE indicates in particular which specification to apply to decode the transported messages
CHOICE *system*	MP			
>GSM				
>>Message(s)	MP	1.to.<maxInterSysMessages>	Bitstring (1..512)	Formatted and coded according to GSM specifications
>cdma2000				
>>cdma2000Message	MP	1.to.<maxInterSysMessages>		
>>>MSG_TYPE(s)	MP		Bitstring (8)	Formatted and coded according to cdma2000 specifications
>>>cdma2000Messagepayload(s)	MP		Bitstring (1..512)	Formatted and coded according to cdma2000 specifications

Condition	Explanation
System	The 'GSM' choice shall be applied when the IE 'System type' is 'GSM except PCS 1900' or 'PCS 1900', and the 'cdma2000' choice shall be applied when the IE 'system type' is 'cdma2000'.

11.1 General message structure

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

BEGIN

IMPORTS

    ActiveSetUpdate-r3,
    ActiveSetUpdateComplete,
    ActiveSetUpdateFailure,
    AssistanceDataDelivery-r3,
    CellChangeOrderFromUTRAN-r3,
    CellChange~~Failure~~OrderFromUTRANFailure,
    CellUpdate,
    CellUpdateConfirm-CCCH-r3,
    CellUpdateConfirm-r3,
    CounterCheck-r3,
    CounterCheckResponse,
    DownlinkDirectTransfer-r3,
    HandoverToUTRANComplete,
    InitialDirectTransfer,
    HandoverFromUTRANCommand-GSM-r3,
    HandoverFromUTRANCommand-CDMA2000-r3,
    HandoverFromUTRANFailure,
    MeasurementControl-r3,
    MeasurementControlFailure,
    MeasurementReport,
    PagingType1,
    PagingType2,
    PhysicalChannelReconfiguration-r3,
    PhysicalChannelReconfigurationComplete,
    PhysicalChannelReconfigurationFailure,
    PhysicalSharedChannelAllocation-r3,
    PUSCHCapacityRequest,
    RadioBearerReconfiguration-r3,
    RadioBearerReconfigurationComplete,
    RadioBearerReconfigurationFailure,
    RadioBearerRelease-r3,
    RadioBearerReleaseComplete,
    RadioBearerReleaseFailure,
    RadioBearerSetup-r3,
    RadioBearerSetupComplete,
    RadioBearerSetupFailure,
    RRCConnectionReject-r3,
    RRCConnectionRelease-r3,
    RRCConnectionRelease-CCCH-r3,
    RRCConnectionReleaseComplete,
    RRCConnectionRequest,
    RRCConnectionSetup-r3,
    RRCConnectionSetupComplete,
    RRCStatus,
    SecurityModeCommand-r3,
    SecurityModeComplete,
    SecurityModeFailure,
    SignallingConnectionRelease-r3,
    SignallingConnectionReleaseRequest,
    SystemInformation-BCH,
    SystemInformation-FACH,
    SystemInformationChangeIndication,
    TransportChannelReconfiguration-r3,
    TransportChannelReconfigurationComplete,
    TransportChannelReconfigurationFailure,
    TransportFormatCombinationControl,
    TransportFormatCombinationControlFailure,
    UECapabilityEnquiry-r3,
    UECapabilityInformation,
    UECapabilityInformationConfirm-r3,
    UplinkDirectTransfer,
    UplinkPhysicalChannelControl-r3,
    URAUpdate,
    URAUpdateConfirm-r3,
    URAUpdateConfirm-CCCH-r3,
    UTRANMobilityInformation,
    UTRANMobilityInformationConfirm,
    UTRANMobilityInformationFailure
```

```
FROM PDU-definitions

-- User Equipment IEs :
    IntegrityCheckInfo
FROM InformationElements;

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

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

DL-DCCH-MessageType ::= CHOICE {
    activeSetUpdate                    ActiveSetUpdate-r3,
    assistanceDataDelivery             AssistanceDataDelivery-r3,
    cellChangeOrderFromUTRAN           CellChangeOrderFromUTRAN-r3,
    cellUpdateConfirm                  CellUpdateConfirm-r3,
    counterCheck                       CounterCheck-r3,
    downlinkDirectTransfer             DownlinkDirectTransfer-r3,
    handoverFromUTRANCommand-GSM       HandoverFromUTRANCommand-GSM-r3,
    handoverFromUTRANCommand-CDMA2000  HandoverFromUTRANCommand-CDMA2000-r3,
    measurementControl                 MeasurementControl-r3,
    pagingType2                        PagingType2,
    physicalChannelReconfiguration     PhysicalChannelReconfiguration-r3,
    physicalSharedChannelAllocation    PhysicalSharedChannelAllocation-r3,
    radioBearerReconfiguration         RadioBearerReconfiguration-r3,
    radioBearerRelease                 RadioBearerRelease-r3,
    radioBearerSetup                   RadioBearerSetup-r3,
    rrcConnectionRelease               RRCConnectionRelease-r3,
    securityModeCommand                SecurityModeCommand-r3,
    signallingConnectionRelease        SignallingConnectionRelease-r3,
    transportChannelReconfiguration    TransportChannelReconfiguration-r3,
    transportFormatCombinationControl  TransportFormatCombinationControl,
    ueCapabilityEnquiry                UECapabilityEnquiry-r3,
    ueCapabilityInformationConfirm     UECapabilityInformationConfirm-r3,
    uplinkPhysicalChannelControl       UplinkPhysicalChannelControl-r3,
    uraUpdateConfirm                   URAUpdateConfirm-r3,
    utranMobilityInformation           UTRANMobilityInformation,
    extension                          NULL
}

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

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

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete            ActiveSetUpdateComplete,
    activeSetUpdateFailure             ActiveSetUpdateFailure,
    cellChangeFailureOrderFromUTRANFailure         CellChangeFailureOrderFromUTRANFailure,
    counterCheckResponse               CounterCheckResponse,
    handoverToUTRANComplete            HandoverToUTRANComplete,
    initialDirectTransfer              InitialDirectTransfer,
    handoverFromUTRANFailure           HandoverFromUTRANFailure,
    measurementControlFailure          MeasurementControlFailure,
    measurementReport                  MeasurementReport,
    physicalChannelReconfigurationComplete
                                       PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                       PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure  RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete         RadioBearerReleaseComplete,
    radioBearerReleaseFailure          RadioBearerReleaseFailure,
    radioBearerSetupComplete           RadioBearerSetupComplete,
    radioBearerSetupFailure            RadioBearerSetupFailure,
    rrcConnectionReleaseComplete       RRCConnectionReleaseComplete,
```

```
    rrcConnectionSetupComplete          RRCConnectionSetupComplete,
    rrcStatus                           RRCStatus,
    securityModeComplete                SecurityModeComplete,
    securityModeFailure                 SecurityModeFailure,
    signallingConnectionReleaseRequest  SignallingConnectionReleaseRequest,
    transportChannelReconfigurationComplete
                                        TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                        TransportChannelReconfigurationFailure,
    transportFormatCombinationControlFailure
                                        TransportFormatCombinationControlFailure,
    ueCapabilityInformation             UECapabilityInformation,
    uplinkDirectTransfer                UplinkDirectTransfer,
    utranMobilityInformationConfirm     UTRANMobilityInformationConfirm,
    utranMobilityInformationFailure     UTRANMobilityInformationFailure,
    extension                           NULL
}
```

11.2 PDU definitions

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

CellChangeOrderFromUTRAN-r3 ::= CHOICE {
    r3                              SEQUENCE {
        cellChangeOrderFromUTRAN-IEs        CellChangeOrderFromUTRAN-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

CellChangeOrderFromUTRAN-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        rab-InformationList             RAB-InformationList                 OPTIONAL,
        interRAT-TargetCellDescription  InterRAT-TargetCellDescription
}

-- ***************************************************
--
-- CELL CHANGE ~~FAILURE~~ ORDER FROM UTRAN FAILURE
--
-- ***************************************************

CellChange~~Failure~~OrderFromUTRANFailure ::= CHOICE {
    r3                              SEQUENCE {
        r3-IEs                          CellChange~~Failure~~OrderFromUTRANFailure-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

CellChange~~Failure~~OrderFromUTRANFailure-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        interRAT-ChangeFailureCause     InterRAT-ChangeFailureCause
}

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

HandoverFromUTRANCommand-GSM-r3 ::= CHOICE {
    r3                              SEQUENCE {
        handoverFromUTRANCommand-GSM-r3
                                        HandoverFromUTRANCommand-GSM-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

HandoverFromUTRANCommand-GSM-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        activationTime                  ActivationTime                      OPTIONAL,
    -- Radio bearer IEs
        remainingRAB-Info               RAB-Info                            OPTIONAL,
    -- Measurement IEs
        band-Indicator                      Band-Indicator,
    -- Other IEs
        message-and-extension           CHOICE {
            gsm-Message                     SEQUENCE {},
            -- In this case, what follows the basic production is a variable length bit string
            -- with no length field, containing the GSM message including GSM padding up to end
```

```
            -- of container, to be analysed according to GSM specifications
            with-extension                  SEQUENCE {
                messages                        GSM-MessageList
            }
        }
}

HandoverFromUTRANCommand-CDMA2000-r3 ::= CHOICE {
    r3                                  SEQUENCE {
        handoverFromUTRANCommand-CDMA2000-r3
                                            HandoverFromUTRANCommand-CDMA2000-r3-IEs,
        nonCriticalExtensions               SEQUENCE {} OPTIONAL
    },
    criticalExtensions                  SEQUENCE {}
}

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

11.3 Information element definitions

```
-- ***************************************************
--
--      MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- ***************************************************

AcquisitionSatInfo ::=              SEQUENCE {
    satID                               SatID,
    doppler0thOrder                     INTEGER (-2048..2047),
    extraDopplerInfo                    ExtraDopplerInfo                    OPTIONAL,
    codePhase                           INTEGER (0..1022),
    integerCodePhase                    INTEGER (0..19),
    gps-BitNumber                       INTEGER (0..3),
    codePhaseSearchWindow               CodePhaseSearchWindow,
    azimuthAndElevation                 AzimuthAndElevation                 OPTIONAL
}

AcquisitionSatInfoList ::=          SEQUENCE (SIZE (1..maxSat)) OF
                                        AcquisitionSatInfo

AdditionalAssistanceData ::=        OCTET STRING (SIZE (1..38))

AdditionalMeasurementID-List ::=    SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasurementIdentity

AlmanacSatInfo ::=                  SEQUENCE {
    satID                               SatID,
    e                                   BIT STRING (SIZE (16)),
    t-oa                                BIT STRING (SIZE (8)),
    deltaI                              BIT STRING (SIZE (16)),
    omegaDot                            BIT STRING (SIZE (16)),
    satHealth                           BIT STRING (SIZE (8)),
    a-Sqrt                              BIT STRING (SIZE (24)),
    omega0                              BIT STRING (SIZE (24)),
    m0                                  BIT STRING (SIZE (24)),
    omega                               BIT STRING (SIZE (24)),
    af0                                 BIT STRING (SIZE (11)),
    af1                                 BIT STRING (SIZE (11))
}

AlmanacSatInfoList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        AlmanacSatInfo

AverageRLC-BufferPayload ::=        ENUMERATED {
                                        pla0, pla4, pla8, pla16, pla32,
                                        pla64, pla128, pla256, pla512,
                                        pla1024, pla2k, pla4k, pla8k, pla16k,
                                        pla32k, pla64k, pla128k, pla256k,
```

```
                                        pla512k, pla1024k }

AzimuthAndElevation ::=             SEQUENCE {
    azimuth                             INTEGER (0..31),
    elevation                           INTEGER (0..7)
}

BadSatList ::=                      SEQUENCE (SIZE (1..maxSat)) OF
                                        INTEGER (0..63)

Band-Indicator ::=                  ENUMERATED (DCS1800BandUsed, PCS1900BandUsed)

BCCH-ARFCN ::=                      INTEGER (0..1023)

BLER-MeasurementResults ::=         SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    dl-TransportChannelBLER             DL-TransportChannelBLER             OPTIONAL
}

BLER-MeasurementResultsList ::=     SEQUENCE (SIZE (1..maxTrCH)) OF
                                        BLER-MeasurementResults

BLER-TransChIdList ::=              SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

BSIC-VerificationRequired ::=       ENUMERATED {
                                        required, notRequired }

BSICReported ::=                    CHOICE {
    verifiedBSIC                        INTEGER (0..maxCellMeas),
    nonVerifiedBSIC                     BCCH-ARFCN
}

BurstModeParameters ::=             SEQUENCE {
    burstStart                          INTEGER (0..15),
    burstLength                         INTEGER (10..25),
    burstFreq                           INTEGER (1..16)
}

CellDCH-ReportCriteria ::=          CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

-- Actual value = IE value * 0.5
CellIndividualOffset ::=            INTEGER (-20..20)


CellInfo ::=                        SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    }
}

CellInfoSI-RSCP ::=                 SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
```

```
            primaryCCPCH-TX-Power                   PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                        TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-RSCP        OPTIONAL
}

CellInfoSI-ECN0 ::=                 SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-ECN0    OPTIONAL
}

CellInfoSI-HCS-RSCP ::=             SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-RSCP    OPTIONAL
}

CellInfoSI-HCS-ECN0 ::=             SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-ECN0    OPTIONAL
}

CellMeasuredResults ::=             SEQUENCE {
    cellIdentity                        CellIdentity                        OPTIONAL,
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    cellSynchronisationInfo         CellSynchronisationInfo         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            cpich-Ec-N0                         CPICH-Ec-N0                 OPTIONAL,
            cpich-RSCP                          CPICH-RSCP                  OPTIONAL,
            pathloss                            Pathloss                    OPTIONAL
        },
        tdd                                 SEQUENCE {
            cellParametersID                    CellParametersID,
            proposedTGSN                        TGSN                        OPTIONAL,
```

```
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP           OPTIONAL,
            timeslotISCP-List                   TimeslotISCP-List           OPTIONAL
        }
    }
}

CellMeasurementEventResults ::=     CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCPICH-Info,
    tdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCCPCH-Info
}

CellPosition ::=                    SEQUENCE {
    relativeNorth                       INTEGER (-32767..32767),
    relativeEast                        INTEGER (-32767..32767),
    relativeAltitude                    INTEGER (-4095..4095)
}

CellReportingQuantities ::=         SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    cellIdentity-reportingIndicator                     BOOLEAN,
    cellSynchronisationInfoReportingIndicator           BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            cpich-Ec-N0-reportingIndicator                          BOOLEAN,
            cpich-RSCP-reportingIndicator                           BOOLEAN,
            pathloss-reportingIndicator                         BOOLEAN
        },
        tdd                                 SEQUENCE {
            timeslotISCP-reportingIndicator                     BOOLEAN,
            proposedTGSN-ReportingRequired                      BOOLEAN,
            primaryCCPCH-RSCP-reportingIndicator                    BOOLEAN,
            pathloss-reportingIndicator                         BOOLEAN
        }
    }
}

CellSelectReselectInfoSIB-11-12 ::= SEQUENCE {
    q-Offset1S-N                        Q-OffsetS-N                         DEFAULT 0,
    q-Offset2S-N                        Q-OffsetS-N                         OPTIONAL,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    hcs-NeighbouringCellInformation-RSCP        HCS-NeighbouringCellInformation-RSCP
    OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                   OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
        gsm                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-RSCP ::=    SEQUENCE {
    q-OffsetS-N                     Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                   OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        },
        gsm                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-ECN0 ::=    SEQUENCE {
    q-Offset1S-N                        Q-OffsetS-N                     DEFAULT 0,
    q-Offset2S-N                        Q-OffsetS-N                     DEFAULT 0,
```

```
    maxAllowedUL-TX-Power                MaxAllowedUL-TX-Power                OPTIONAL,
    modeSpecificInfo                     CHOICE {
        fdd                                  SEQUENCE {
            q-QualMin                            Q-QualMin                    OPTIONAL,
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        },
        tdd                                  SEQUENCE {
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        },
        gsm                                  SEQUENCE {
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-HCS-RSCP ::=    SEQUENCE {
    q-OffsetS-N                      Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power                MaxAllowedUL-TX-Power                OPTIONAL,
    hcs-NeighbouringCellInformation-RSCP        HCS-NeighbouringCellInformation-RSCP
    OPTIONAL,
    modeSpecificInfo                     CHOICE {
        fdd                                  SEQUENCE {
            q-QualMin                            Q-QualMin                    OPTIONAL,
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        },
        tdd                                  SEQUENCE {
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        },
        gsm                                  SEQUENCE {
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-HCS-ECN0 ::=    SEQUENCE {
    q-Offset1S-N                         Q-OffsetS-N                     DEFAULT 0,
    q-Offset2S-N                         Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power                MaxAllowedUL-TX-Power                OPTIONAL,
    hcs-NeighbouringCellInformation-ECN0        HCS-NeighbouringCellInformation-ECN0
    OPTIONAL,
    modeSpecificInfo                     CHOICE {
        fdd                                  SEQUENCE {
            q-QualMin                            Q-QualMin                    OPTIONAL,
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        },
        tdd                                  SEQUENCE {
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        },
        gsm                                  SEQUENCE {
            q-RxlevMin                           Q-RxlevMin                   OPTIONAL
        }
    }
}

CellSynchronisationInfo ::=          SEQUENCE {
    modeSpecificInfo                     CHOICE {
        fdd                                  SEQUENCE {
            countC-SFN-Frame-difference          CountC-SFN-Frame-difference     OPTIONAL,
            tm                                   INTEGER(0..38399)
        },
        tdd                                  SEQUENCE {
            countC-SFN-Frame-difference          CountC-SFN-Frame-difference
        }
    }
}

CellToMeasure ::=                    SEQUENCE {
    sfn-sfn-Drift                        INTEGER (0..30)                      OPTIONAL,
    primaryCPICH-Info                    PrimaryCPICH-Info,
    frequencyInfo                        FrequencyInfo                        OPTIONAL,
    sfn-SFN-ObservedTimeDifference       SFN-SFN-ObsTimeDifference1,
    fineSFN-SFN                          FineSFN-SFN,
    cellPosition                         CellPosition                         OPTIONAL
}

CellToMeasureInfoList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                         CellToMeasure
```

```
CellToReport ::=                    SEQUENCE {
    bsicReported                        BSICReported
}

CellToReportList ::=                SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellToReport

CodePhaseSearchWindow ::=           ENUMERATED {
                                        w1023, w1, w2, w3, w4, w6, w8,
                                        w12, w16, w24, w32, w48, w64,
                                        w96, w128, w192 }

CountC-SFN-Frame-difference ::= SEQUENCE {
    countC-SFN-High                 INTEGER(0..15),         -- Actual value = IE value * 256
    off                             INTEGER(0..255)
}

CPICH-Ec-N0 ::=                     INTEGER (-20..0)

-- IE value 0 = <-24 dB, 1 = between -24 and -23 and so on
CPICH-Ec-N0-OTDOA ::=               INTEGER (0..26)

CPICH-RSCP ::=                      INTEGER (-115..-40)


DeltaPRC ::=                        INTEGER (-127..127)

DeltaRRC ::=                        INTEGER (-7..7)

DGPS-CorrectionSatInfo ::=          SEQUENCE {
    satID                               SatID,
    iode                                BIT STRING (SIZE (8)),
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
    deltaPRC2                           DeltaPRC,
    deltaRRC2                           DeltaRRC,
    deltaPRC3                           DeltaPRC,
    deltaRRC3                           DeltaRRC
}

DGPS-CorrectionSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-CorrectionSatInfo

DGPS-Information ::=                SEQUENCE {
    satID                               SatID,
    iode                                IODE,
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
    deltaPRC2                           DeltaPRC,
    deltaRRC2                           DeltaRRC
}

DGPS-InformationList ::=            SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-Information

DiffCorrectionStatus ::=            ENUMERATED {
                                        udre-1-0, udre-0-75, udre-0-5, udre-0-3,
                                        udre-0-2, udre-0-1, noData, invalidData }

-- Actual value = IE value * 0.02
DL-PhysicalChannelBER ::=           INTEGER (0..255)

DL-TransportChannelBLER ::=         INTEGER (0..63)

DopplerUncertainty ::=              ENUMERATED {
                                        hz12-5, hz25, hz50, hz100, hz200 }

EllipsoidPoint ::=                  OCTET STRING (SIZE (7))

EllipsoidPointAltitude ::=          OCTET STRING (SIZE (9))

EllipsoidPointAltitudeEllipse ::=   OCTET STRING (SIZE (14))

EllipsoidPointUncertCircle ::=      OCTET STRING (SIZE (8))

EllipsoidPointUncertEllipse ::=     OCTET STRING (SIZE (11))
```

```
EnvironmentCharacterisation ::=     ENUMERATED {
                                        possibleHeavyMultipathNLOS,
                                        lightMultipathLOS,
                                        notDefined }

Event1a ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1b ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W
}

Event1c ::=                         SEQUENCE {
    replacementActivationThreshold      ReplacementActivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1e ::=                     SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    thresholdUsedFrequency              ThresholdUsedFrequency
}

Event1f ::=                     SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    thresholdUsedFrequency              ThresholdUsedFrequency
}

Event2a ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2b ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2c ::=                         SEQUENCE {
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2d ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

Event2e ::=                         SEQUENCE {
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}
```

```
Event2f ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

Event3a ::=                         SEQUENCE {
    thresholdOwnSystem                  Threshold,
    w                                   W,
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

Event3b ::=                         SEQUENCE {
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL

}

Event3c ::=                         SEQUENCE {
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

Event3d ::=                         SEQUENCE {
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

EventIDInterFreq ::=                ENUMERATED {
                                        e2a, e2b, e2c, e2d, e2e, e2f }

EventIDInterRAT ::=                 ENUMERATED {
                                        e3a, e3b, e3c, e3d }

EventIDIntraFreq ::=                ENUMERATED {
                                        e1a, e1b, e1c, e1d, e1e,
                                        e1f, e1g, e1h, e1i }

EventResults ::=                    CHOICE {
    intraFreqEventResults               IntraFreqEventResults,
    interFreqEventResults               InterFreqEventResults,
    interRATEventResults                InterRATEventResults,
    trafficVolumeEventResults           TrafficVolumeEventResults,
    qualityEventResults                 QualityEventResults,
    ue-InternalEventResults             UE-InternalEventResults,
    up-MeasurementEventResults          UP-MeasurementEventResults
}

ExtraDopplerInfo ::=                SEQUENCE {
    doppler1stOrder                     INTEGER (-42..21),
    dopplerUncertainty                  DopplerUncertainty
}

FACH-MeasurementOccasionInfo ::=    SEQUENCE {
    fACH-meas-occasion-coeff            INTEGER (1..12)                     OPTIONAL,
    inter-freq-FDD-meas-ind             BOOLEAN,
    inter-freq-TDD-meas-ind             BOOLEAN,
    inter-RAT-meas-ind                  SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                            RAT-Type                        OPTIONAL
}

FilterCoefficient ::=               ENUMERATED {
                                        fc0, fc1, fc2, fc3, fc4, fc5,
                                        fc6, fc7, fc8, fc9, fc11, fc13,
                                        fc15, fc17, fc19, spare1 }

FineSFN-SFN ::=                     ENUMERATED {
```

```
                                        fs0, fs0-25, fs0-5, fs0-75 }

ForbiddenAffectCell ::=             CHOICE {
    fdd                                 PrimaryCPICH-Info,
    tdd                                 PrimaryCCPCH-Info
}

ForbiddenAffectCellList ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell

FreqQualityEstimateQuantity-FDD ::= ENUMERATED {
                                        cpich-Ec-N0,
                                        cpich-RSCP }

FreqQualityEstimateQuantity-TDD ::= ENUMERATED {
                                        primaryCCPCH-RSCP }

GPS-MeasurementParam ::=            SEQUENCE {
    satelliteID                         INTEGER (0..63),
    c-N0                                INTEGER (0..63),
    doppler                             INTEGER (-32768..32768),
    wholeGPS-Chips                      INTEGER (0..1023),
    fractionalGPS-Chips                 INTEGER (0..1023),
    multipathIndicator                  MultipathIndicator,
    pseudorangeRMS-Error                INTEGER (0..63)
}

GPS-MeasurementParamList ::=        SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-MeasurementParam

GSM-CarrierRSSI ::=                 BIT STRING (SIZE (6))


GSM-MeasuredResults ::=             SEQUENCE {
    gsm-CarrierRSSI                     GSM-CarrierRSSI                     OPTIONAL,
    pathloss                            Pathloss                            OPTIONAL,
    bsicReported                        BSICReported,
    observedTimeDifferenceToGSM         ObservedTimeDifferenceToGSM         OPTIONAL
}

GSM-MeasuredResultsList ::=         SEQUENCE (SIZE (1..maxReportedGSMCells)) OF
                                        GSM-MeasuredResults

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

GPS-TOW-1msec ::=                   INTEGER (0..604799999)

GPS-TOW-1usec ::=                   SEQUENCE {
    tow-1msec                           GPS-TOW-1msec,
    tow-rem-usec                        GPS-TOW-rem-usec
}

GPS-TOW-Assist ::=                  SEQUENCE {
    satID                               SatID,
    tlm-Message                         BIT STRING (SIZE (14)),
    antiSpoof                           BOOLEAN,
    alert                               BOOLEAN,
    tlm-Reserved                        BIT STRING (SIZE (2))
}

GPS-TOW-AssistList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-TOW-Assist

GPS-TOW-rem-usec ::=                INTEGER (0..999)

HCS-CellReselectInformation-RSCP ::=        SEQUENCE {
    penaltyTime                                 PenaltyTime-RSCP
    -- TABULAR: The default value is "notUsed", temporary offset is nested inside PenaltyTime
}

HCS-CellReselectInformation-ECN0 ::=        SEQUENCE {
    penaltyTime                         PenaltyTime-ECN0
    -- TABULAR: The default value is "notUsed", temporary offset is nested inside PenaltyTime
}

HCS-NeighbouringCellInformation-RSCP ::= SEQUENCE {
```

```
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    hcs-CellReselectInformation         HCS-CellReselectInformation-RSCP
}

HCS-NeighbouringCellInformation-ECN0 ::= SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    hcs-CellReselectInformation         HCS-CellReselectInformation-ECN0
}

HCS-PRIO ::=                        INTEGER (0..7)

HCS-ServingCellInformation ::=      SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    t-CR-Max                            T-CRMax                             OPTIONAL
}

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

-- Actual value = IE value * 0.5
HysteresisInterFreq ::=             INTEGER (0..29)

InterFreqCell ::=                   SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults
}

InterFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

InterFreqCellInfoList ::=           SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList                OPTIONAL
}

InterFreqCellInfoSI-List-RSCP ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-RSCP        OPTIONAL
}

InterFreqCellInfoSI-List-ECN0 ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-ECN0        OPTIONAL
}

InterFreqCellInfoSI-List-HCS-RSCP ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-RSCP    OPTIONAL
}
InterFreqCellInfoSI-List-HCS-ECN0 ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-ECN0    OPTIONAL
}

InterFreqCellList ::=               SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqCell

InterFreqCellMeasuredResultsList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellMeasuredResults

InterFreqEvent ::=                  CHOICE {
    event2a                             Event2a,
    event2b                             Event2b,
    event2c                             Event2c,
    event2d                             Event2d,
    event2e                             Event2e,
    event2f                             Event2f
}

InterFreqEventList ::=              SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        InterFreqEvent


InterFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList                   OPTIONAL
```

```
}


InterFreqMeasQuantity ::=           SEQUENCE {
    reportingCriteria                   CHOICE {
        intraFreqReportingCriteria          SEQUENCE {
            intraFreqMeasQuantity               IntraFreqMeasQuantity
        },
        interFreqReportingCriteria          SEQUENCE {
            filterCoefficient                   FilterCoefficient           DEFAULT fc0,
            modeSpecificInfo                    CHOICE {
                fdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-FDD     FreqQualityEstimateQuantity-FDD
                },
                tdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-TDD     FreqQualityEstimateQuantity-TDD
                }
            }
        }
    }
}

InterFreqMeasuredResults ::=        SEQUENCE {
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    utra-CarrierRSSI                    UTRA-CarrierRSSI                    OPTIONAL,
    interFreqCellMeasuredResultsList    InterFreqCellMeasuredResultsList    OPTIONAL
}

InterFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqMeasuredResults


InterFreqMeasurementSysInfo-RSCP ::=    SEQUENCE {
    interFreqCellInfoSI-List                InterFreqCellInfoSI-List-RSCP       OPTIONAL
}

InterFreqMeasurementSysInfo-ECN0 ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-ECN0       OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-RSCP ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-RSCP   OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-ECN0 ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-ECN0   OPTIONAL
}

InterFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    interFreqReportingCriteria          InterFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterFreqReportingCriteria ::=      SEQUENCE {
    interFreqEventList                  InterFreqEventList                  OPTIONAL
}

InterFreqReportingQuantity ::=      SEQUENCE {
    utra-Carrier-RSSI                   BOOLEAN,
    frequencyQualityEstimate            BOOLEAN,
    nonFreqRelatedQuantities            CellReportingQuantities
}

InterFrequencyMeasurement ::=       SEQUENCE {
    interFreqCellInfoList               InterFreqCellInfoList,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingQuantity          InterFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    interFreqSetUpdate                  UE-AutonomousUpdateMode             OPTIONAL,
    reportCriteria                      InterFreqReportCriteria
}
InterRAT-TargetCellDescription::=   SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            bsic                                BSIC,
            band-Indicator                      Band-Indicator,
```

```
			bcch-ARFCN					BCCH-ARFCN,
			ncMode						NC-Mode				OPTIONAL
		},
		is-2000						NULL,
		spare						NULL
	}
}

InterRATCellID ::=				INTEGER (0..maxCellMeas-1)

InterRATCellInfoList ::=			SEQUENCE {
	removedInterRATCellList			RemovedInterRATCellList,
	newInterRATCellList				NewInterRATCellList
}

InterRATCellInfoList-HCS ::=			SEQUENCE {
	removedInterRATCellList			RemovedInterRATCellList,
	newInterRATCellList				NewInterRATCellList-HCS
}

InterRATEvent ::=				CHOICE {
	event3a							Event3a,
	event3b							Event3b,
	event3c							Event3c,
	event3d							Event3d
}

InterRATEventList ::=			SEQUENCE (SIZE (1..maxMeasEvent)) OF
								InterRATEvent

InterRATEventResults ::=			SEQUENCE {
	eventID							EventIDInterRAT,
	cellToReportList				CellToReportList
}

InterRATInfo ::=					ENUMERATED {
								gsm }

InterRATMeasQuantity ::=				SEQUENCE {
	measQuantityUTRAN-QualityEstimate		IntraFreqMeasQuantity			OPTIONAL,
	ratSpecificInfo						CHOICE {
		gsm								SEQUENCE {
			measurementQuantity					MeasurementQuantityGSM,
			filterCoefficient					FilterCoefficient		DEFAULT fc1,
			bsic-VerificationRequired			BSIC-VerificationRequired
		},
		is-2000							SEQUENCE {
			tadd-EcIo							INTEGER (0..63),
			tcomp-EcIo							INTEGER (0..15),
			softSlope							INTEGER (0..63)			OPTIONAL,
			addIntercept						INTEGER (0..63)			OPTIONAL
		}
	}
}

InterRATMeasuredResults ::=		CHOICE {
	gsm								GSM-MeasuredResultsList,
	spare							NULL
}

InterRATMeasuredResultsList ::= SEQUENCE (SIZE (1..maxOtherRAT)) OF
								InterRATMeasuredResults

InterRATMeasurement ::=			SEQUENCE {
	interRATCellInfoList			InterRATCellInfoList				OPTIONAL,
	interRATMeasQuantity			InterRATMeasQuantity				OPTIONAL,
	interRATReportingQuantity		InterRATReportingQuantity		OPTIONAL,
	reportCriteria					InterRATReportCriteria
}

InterRATMeasurementSysInfo ::=	SEQUENCE {
	interRATCellInfoList			InterRATCellInfoList				OPTIONAL
}

InterRATMeasurementSysInfo-HCS ::=	SEQUENCE {
	interRATCellInfoList			InterRATCellInfoList-HCS			OPTIONAL
}
```

```
InterRATReportCriteria ::=      CHOICE {
    interRATReportingCriteria           InterRATReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterRATReportingCriteria ::=   SEQUENCE {
    interRATEventList               InterRATEventList               OPTIONAL
}

InterRATReportingQuantity ::=   SEQUENCE {
    utran-EstimatedQuality              BOOLEAN,
    ratSpecificInfo                 CHOICE {
        gsm                                 SEQUENCE {
            pathloss                            BOOLEAN,
            observedTimeDifferenceGSM           BOOLEAN,
            gsm-Carrier-RSSI                    BOOLEAN
        }
    }
}

IntraFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

IntraFreqCellInfoList ::=           SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList                OPTIONAL
}

IntraFreqCellInfoSI-List-RSCP ::=   SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-RSCP
}

IntraFreqCellInfoSI-List-ECN0 ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-ECN0
}

IntraFreqCellInfoSI-List-HCS-RSCP ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-RSCP
}

IntraFreqCellInfoSI-List-HCS-ECN0 ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-ECN0
}

IntraFreqEvent ::=                  CHOICE {
    e1a                                 Event1a,
    e1b                                 Event1b,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEventCriteria ::=          SEQUENCE {
    event                               IntraFreqEvent,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteriaList ::=      SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria

IntraFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDIntraFreq,
    cellMeasurementEventResults         CellMeasurementEventResults
}

IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT fc1,
    modeSpecificInfo                    CHOICE {
```

```
        fdd                             SEQUENCE {
            intraFreqMeasQuantity-FDD       IntraFreqMeasQuantity-FDD
        },
        tdd                             SEQUENCE {
            intraFreqMeasQuantity-TDDList   IntraFreqMeasQuantity-TDDList
        }
    }
}

IntraFreqMeasQuantity-FDD ::=       ENUMERATED {
                                        cpich-Ec-NO,
                                        cpich-RSCP,
                                        pathloss,
                                        utra-CarrierRSSI }

IntraFreqMeasQuantity-TDD ::=       ENUMERATED {
                                        primaryCCPCH-RSCP,
                                        pathloss,
                                        timeslotISCP,
                                        utra-CarrierRSSI }

IntraFreqMeasQuantity-TDDList ::=   SEQUENCE (SIZE (1..4)) OF
                                        IntraFreqMeasQuantity-TDD

IntraFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellMeasuredResults

IntraFreqMeasurementSysInfo-RSCP ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-RSCP       OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-ECN0 ::=        SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-ECN0       OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-RSCP ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-RSCP   OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-ECN0 ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-ECN0   OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

IntraFreqReportingCriteria ::=      SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList      OPTIONAL
}

IntraFreqReportingQuantity ::=      SEQUENCE {
    activeSetReportingQuantities        CellReportingQuantities,
    monitoredSetReportingQuantities     CellReportingQuantities,
    detectedSetReportingQuantities      CellReportingQuantities             OPTIONAL
}
```

```
IntraFreqReportingQuantityForRACH ::= SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-FDD        IntraFreqRepQuantityRACH-FDD
        },
        tdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-TDDList    IntraFreqRepQuantityRACH-TDDList
        }
    }
}

IntraFreqRepQuantityRACH-FDD ::=    ENUMERATED {
                                        cpich-EcN0, cpich-RSCP,
                                        pathloss, noReport }

IntraFreqRepQuantityRACH-TDD ::=    ENUMERATED {
                                        timeslotISCP,
                                        primaryCCPCH-RSCP,
                                        noReport }

IntraFreqRepQuantityRACH-TDDList ::= SEQUENCE (SIZE (1..2)) OF
                                        IntraFreqRepQuantityRACH-TDD

IntraFrequencyMeasurement ::=       SEQUENCE {
    intraFreqCellInfoList               IntraFreqCellInfoList               OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantity          IntraFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      IntraFreqReportCriteria             OPTIONAL
}

IODE ::=                            INTEGER (0..255)

IP-Length ::=                       ENUMERATED {
                                        ipl5, ipl10 }

IP-Spacing ::=                      ENUMERATED {
                                        e5, e7, e10, e15, e20,
                                        e30, e40, e50 }

IS-2000SpecificMeasInfo ::=         ENUMERATED {
                                        frequency, timeslot, colourcode,
                                        outputpower, pn-Offset }

MaxNumberOfReportingCellsType1 ::=  ENUMERATED {
                                        e1, e2, e3, e4, e5, e6}

MaxNumberOfReportingCellsType2 ::=  ENUMERATED {
                                        e1, e2, e3, e4, e5, e6, e7, e8, e9, e10, e11, e12}

MaxNumberOfReportingCellsType3 ::=  ENUMERATED {
                                        viactCellsPlus1,
                                        viactCellsPlus2,
                                        viactCellsPlus3,
                                        viactCellsPlus4,
                                        viactCellsPlus5,
                                        viactCellsPlus6 }

MaxReportedCellsOnRACH ::=          ENUMERATED {
                                        noReport,
                                        currentCell,
                                        currentAnd-1-BestNeighbour,
                                        currentAnd-2-BestNeighbour,
                                        currentAnd-3-BestNeighbour,
                                        currentAnd-4-BestNeighbour,
                                        currentAnd-5-BestNeighbour,
                                        currentAnd-6-BestNeighbour }

MeasuredResults ::=                 CHOICE {
    intraFreqMeasuredResultsList        IntraFreqMeasuredResultsList,
    interFreqMeasuredResultsList        InterFreqMeasuredResultsList,
    interRATMeasuredResultsList     InterRATMeasuredResultsList,
    trafficVolumeMeasuredResultsList    TrafficVolumeMeasuredResultsList,
    qualityMeasuredResults              QualityMeasuredResults,
    ue-InternalMeasuredResults          UE-InternalMeasuredResults,
    up-MeasuredResults                  UP-MeasuredResults
```

```
}

MeasuredResultsList ::=             SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults

MeasuredResultsOnRACH ::=           SEQUENCE {
    currentCell                         SEQUENCE {
        modeSpecificInfo                    CHOICE {
            fdd                                 SEQUENCE {
                measurementQuantity                 CHOICE {
                    cpich-Ec-N0                         CPICH-Ec-N0,
                    cpich-RSCP                          CPICH-RSCP,
                    pathloss                            Pathloss
                }
            },
            tdd                                 SEQUENCE {
                timeslotISCP                        TimeslotISCP-List       OPTIONAL,
                primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP       OPTIONAL
            }
        }
    },
    monitoredCells                      MonitoredCellRACH-List              OPTIONAL
}

MeasurementCommand ::=              CHOICE {
    setup                               MeasurementType,
    modify                              SEQUENCE {
        measurementType                     MeasurementType                 OPTIONAL
    },
    release                             NULL
}

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

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

MeasurementIdentity ::=     INTEGER (1..16)

MeasurementQuantityGSM ::=          ENUMERATED {
                                        gsm-CarrierRSSI,
                                        pathloss }

MeasurementReportingMode ::=        SEQUENCE {
```

```
    measurementReportTransferMode       TransferMode,
    periodicalOrEventTrigger            PeriodicalOrEventTrigger
}

MeasurementType ::=                 CHOICE {
    intraFrequencyMeasurement           IntraFrequencyMeasurement,
    interFrequencyMeasurement           InterFrequencyMeasurement,
    interRATMeasurement             InterRATMeasurement,
    up-Measurement                      UP-Measurement,
    trafficVolumeMeasurement            TrafficVolumeMeasurement,
    qualityMeasurement                  QualityMeasurement,
    ue-InternalMeasurement              UE-InternalMeasurement
}

MeasurementValidity ::=             SEQUENCE {
    ue-State                            ENUMERATED {
                                            cell-DCH, all-But-Cell-DCH, all-States }
}

MonitoredCellRACH-List ::=          SEQUENCE (SIZE (1..7)) OF
                                        MonitoredCellRACH-Result

MonitoredCellRACH-Result ::=        SEQUENCE {
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            measurementQuantity                 CHOICE {
                cpich-Ec-N0                         CPICH-Ec-N0,
                cpich-RSCP                          CPICH-RSCP,
                pathloss                            Pathloss
            }                                                               OPTIONAL
        },
        tdd                                 SEQUENCE {
            cellParametersID                    CellParametersID,
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP
        }
    }
}

MultipathIndicator ::=              ENUMERATED {
                                        nm,
                                        low,
                                        medium,
                                        high }

N-CR-T-CRMaxHyst ::=                SEQUENCE {
    n-CR                                INTEGER (1..16)                     DEFAULT 8,
    t-CRMaxHyst                         T-CRMaxHyst
}

NavigationModelSatInfo ::=          SEQUENCE {
    satID                               SatID,
    satelliteStatus                     SatelliteStatus,
    navModel                            NavModel
}

NavigationModelSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        NavigationModelSatInfo

NavModel ::=                        SEQUENCE {
    codeOnL2                            BIT STRING (SIZE (2)),
    uraIndex                            BIT STRING (SIZE (4)),
    satHealth                           BIT STRING (SIZE (6)),
    iodc                                BIT STRING (SIZE (10)),
    l2Pflag                             BIT STRING (SIZE (1)),
    sf1Revd                             SubFrame1Reserved,
    t-GD                                BIT STRING (SIZE (8)),
    t-oc                                BIT STRING (SIZE (16)),
    af2                                 BIT STRING (SIZE (8)),
    af1                                 BIT STRING (SIZE (16)),
    af0                                 BIT STRING (SIZE (22)),
    c-rs                                BIT STRING (SIZE (16)),
    delta-n                             BIT STRING (SIZE (16)),
    m0                                  BIT STRING (SIZE (32)),
    c-uc                                BIT STRING (SIZE (16)),
    e                                   BIT STRING (SIZE (32)),
    c-us                                BIT STRING (SIZE (16)),
```

```
    a-Sqrt                              BIT STRING (SIZE (32)),
    t-oe                                BIT STRING (SIZE (16)),
    fitInterval                         BIT STRING (SIZE (1)),
    aodo                                BIT STRING (SIZE (5)),
    c-ic                                BIT STRING (SIZE (16)),
    omega0                              BIT STRING (SIZE (32)),
    c-is                                BIT STRING (SIZE (16)),
    i0                                  BIT STRING (SIZE (32)),
    c-rc                                BIT STRING (SIZE (16)),
    omega                               BIT STRING (SIZE (32)),
    omegaDot                            BIT STRING (SIZE (24)),
    iDot                                BIT STRING (SIZE (14))
}
NC-Mode::=                          BIT STRING (SIZE (3))

Neighbour ::=                       SEQUENCE {
    neighbourIdentity                   PrimaryCPICH-Info                   OPTIONAL,
    neignbourQuantity                   NeighbourQuantity,
    sfn-SFN-ObsTimeDifference2          SFN-SFN-ObsTimeDifference2
}

NeighbourList ::=                   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        Neighbour

-- **TODO**, to be defined fully
NeighbourQuantity ::=               SEQUENCE {
}

NewInterFreqCell ::=                SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfo
}

NewInterFreqCellList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCell

NewInterFreqCellSI-RSCP ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-RSCP
}

NewInterFreqCellSI-ECN0 ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-ECN0
}

NewInterFreqCellSI-HCS-RSCP ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-HCS-RSCP
}

NewInterFreqCellSI-HCS-ECN0 ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-HCS-ECN0
}

NewInterFreqCellSI-List-ECN0 ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-ECN0

NewInterFreqCellSI-List-HCS-RSCP ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-HCS-RSCP

NewInterFreqCellSI-List-HCS-ECN0 ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-HCS-ECN0

NewInterFreqCellSI-List-RSCP ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-RSCP

NewInterRATCell ::=             SEQUENCE {
    interRATCellID                      InterRATCellID          OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
```

```
            bsic                                    BSIC,
            band-Indicator                          Band-Indicator,
            bcch-ARFCN                              BCCH-ARFCN,
            gsm-OutputPower                         GSM-OutputPower             OPTIONAL
        },
        is-2000                                 SEQUENCE {
            is-2000SpecificMeasInfo                 IS-2000SpecificMeasInfo
        },
        spare1                                  NULL,
        spare2                                  NULL
    }
}

NewInterRATCell-HCS ::=             SEQUENCE {
    interRATCellID                      InterRATCellID              OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            bsic                                BSIC,
            band-Indicator                      Band-Indicator,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPower                     GSM-OutputPower             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare1                              NULL,
        spare2                              NULL
    }
}
-- ***************************************************
--
--      OTHER INFORMATION ELEMENTS (10.3.8)
--
-- ***************************************************

ReceivedMessageType ::=             ENUMERATED {
                                        activeSetUpdate,
                                        cellUpdateConfirm,
                                        cellchangeorderfromUTRAN,
                                        counterCheck,
                                        downlinkDirectTransfer,
                                        interRATHandoverCommand,
                                        measurementControl,
                                        pagingType2,
                                        physicalChannelReconfiguration,
                                        physicalSharedChannelAllocation,
                                        radioBearerReconfiguration,
                                        radioBearerRelease,
                                        radioBearerSetup,
                                        rrcConnectionRelease,
                                        rrcConnectionReject,
                                        rrcConnectionSetup,
                                        securityModeCommand,
                                        signallingConnectionRelease,
                                        transportChannelReconfiguration,
                                        transportFormatCombinationControl,
                                        ueCapabilityEnquiry,
                                        ueCapabilityInformationConfirm,
                                        uplinkPhysicalChannelControl,
                                        uraUpdateConfirm,
                                        utranMobilityInformation,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7
}
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3GPP TSG-RAN WG2 Meeting #19 ***Tdoc R2-010675***
Sophia Antipolis, France, 19 - 23 February 2001

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**663**	⌘ rev	**r1**	⌘ Current version:	**3.5.0**	⌘

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

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

Title:	⌘	RLC status transmission in CELL_PCH and URA_PCH		
Source:	⌘	TSG-RAN WG2		
Work item code:	⌘		***Date:*** ⌘	2001-02-23
Category:	⌘	**F**	***Release:*** ⌘	R99
		Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change:	⌘	Unclear and incorrect behaviour of RLC in CELL_PCH and URA_PCH state. It is not defined how to handle periodical RLC status transmissions in CELL_PCH and URA_PCH.
Summary of change:	⌘	Both uplink RLC data PDUs and uplink RLC control PDUs will lead to CELL UPDATE when the UE is in CELL_PCH or URA_PCH state (currently it is undefined what actions shall be taken when the UE has a control PDU to transmit). It is clarified that RRC shall block the periodical status triggering in RLC when CELL_PCH or URA_PCH is entered. When CELL_FACH is entered, the periodical status triggering is unblocked. Other status triggers are not blocked in CELL_PCH/URA_PCH. This prevents RLC deadlock when UTRAN has ordered the UE into CELL_PCH/URA_PCH with some downlink data unacknowledged. Revision 1: "block" is changed to "prohibit"
Consequences if not approved:	⌘	The current specification is unclear and may lead to very poor battery life time in CELL_PCH/URA_PCH.

Clauses affected:	⌘	8.2.2.3, 8.3.1.2, 8.3.1.6		
Other specs affected:	⌘	[X] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘	25.322
Other comments:	⌘			

How to create CRs using this form:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

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

If the UE receives:

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

it shall perform actions specified below:

- store the received message in the variable ORDERED_CONFIG;
- may first release the current physical channel configuration and
- then establish a new physical channel configuration and act upon all received information elements as specified in subclause 8.6, unless specified in the following:
  - 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 subclause 8.6 and:
    - infer that the PDSCH will be transmitted from the cell from which the downlink DPCH is transmitted.
- The UE shall enter a state according to subclause 8.6.3.3.

If the UE remains in CELL_DCH state after state transition, the UE shall:

- if the IE "UL DPCH Info" is absent, not change its current UL Physical channel configuration;
- if the IE "DL DPCH Info for each RL" is absent, not change its current DL Physical channel configuration.

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

- start timer T305 if timer T305 is not running;
- select PRACH according to subclause 8.6.6.2;
- select Secondary CCPCH according to subclause 8.6.6.5.
- use the transport format set given in system information;
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - ignore that IE and stop using DRX.
- if the contents of the variable C_RNTI is empty:
  - perform a cell update procedure according to subclause 8.3.1 and then proceed as below.
- transmit a response message as specified in subclause 8.2.2.4a, setting the information elements as specified below:
  - 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.
  - if the variable START_VALUE_TO_TRANSMIT is set, the UE shall:

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

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

- clear that entry.

- if the variable PDCP_SN_INFO is not empty:

  - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;

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

  - set the IE "Uplink Timing Advance" to the calculated value.

If after state transition the UE enters CELL_PCH or URA_PCH state, the UE shall:

- ~~block~~prohibit periodical status transmission in RLC;
- remove any C-RNTI from MAC;
- clear the variable C_RNTI;
- start timer T305 if timer T305 is not running;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in subclause 8.6.3.2.

The procedure ends.

8.3.1.2 Initiation

A UE shall initiate the cell update procedure in the following cases:

- Uplink data transmission:
  - if the UE is in URA_PCH or CELL_PCH state; and
  - if the UE has uplink RLC data PDU or uplink RLC control PDU ~~data or a signalling message~~ on RB 1 or upwards to transmit:
    - perform cell update using the cause "uplink data transmission".
- Paging response:
  - if the criteria for performing cell update with the cause specified above in the current subclause is not met; and
  - if the UE in URA_PCH or CELL_PCH state, receives a PAGING TYPE 1 message fulfilling the conditions for initiating a cell update procedure specified in subclause 8.1.2.3:
    - perform cell update using the cause "paging response".
- Re-entering service area:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and

- if the UE has been out of service area and re-enters service area before T307 or T317 expires:
    - perform cell update using the cause "re-entering service area".
- Radio link failure:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_DCH state; and
  - if the criteria for radio link failure is met as specified in subclause 8.5.6:
    - perform cell update using the cause "radio link failure".
- RLC unrecoverable error:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE detects RLC unrecoverable error in an AM RLC entity:
    - perform cell update using the cause "RLC unrecoverable error".
- Cell reselection:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE performs cell re-selection:
    - perform cell update using the cause "cell reselection".
- Periodical cell update:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the timer T305 expires; and
  - if the criteria for "in service area" as specified in subclause 8.5.5.2 is fulfilled; and
  - if periodic cell updating has been requested in system information block type 1:
    - perform cell update using the cause "periodical cell update".

A UE in URA_PCH state shall initiate the URA update procedure in the following cases:

- URA reselection:
  - if the criteria for performing URA update with the cause as specified above is not met; and
  - if the UE detects that the current URA assigned to the UE, stored in the variable URA_IDENTITY, is not present in the list of URA identities in system information block type 2:
    - perform URA update using the cause "URA reselection".
- Periodic URA update:
  - if none of the criteria for performing cell update with the causes as specified above is met; and
  - if the timer T305 expires while the UE is in the service area; and
    - periodic URA updating has been requested in system information block type 1:

      - perform URA update using the cause "periodic URA update".

When initiating the URA update or cell update procedure, the UE shall:

- stop timer T305;
- if the UE is in CELL_DCH state:
  - in the variable RB_TIMER_INDICATOR, set the IE "T314 expired" and the IE "T315 expired" to FALSE;
  - if the stored values of the timer T314 and timer T315 are both equal to zero:
    - release all its radio resources;
    - enter idle mode;
    - indicate to the non-access stratum local end release of the signalling connections and all established radio access bearers in the variable ESTABLISHED_RABS;
    - perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
    - And the procedure ends.
  - if the stored value of the timer T314 is equal to zero:
    - release all radio bearers, associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";
    - in the variable RB_TIMER_INDICATOR set the IE "T314 expired" to TRUE;
  - if the stored value of the timer T315 is equal to zero:
    - release all radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";
    - in the variable RB_TIMER_INDICATOR set the IE "T315 expired" to TRUE;
  - if the stored value of the timer T314 is greater than zero:
    - re-start timer T314;
  - if the stored value of the timer T315 is greater than zero:
    - re-start timer T315;
  - for the released radio bearer(s):
    - delete the information about the radio bearer from the variable ESTABLISHED_RABS;
    - when all radio bearers belonging to the same radio access bearer have been released:
      - indicate local end release of the radio access bearer to the upper layer entity using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;
      - delete all information about the radio access bearer from the variable ESTABLISHED_RABS;
- set the variables PROTOCOL_ERROR_INDICATOR, FAILURE_INDICATOR, UNSUPPORTED_CONFIGURATION and INVALID_CONFIGURATION to FALSE;
- move to CELL_FACH state, if not already in that state;
- if the UE performs cell re-selection:
  - clear the variable C_RNTI; and
  - stop using that C_RNTI just cleared from the variable C_RNTI in MAC;
- set CFN in relation to SFN of current cell according to subclause 8.5.15;

- set the contents of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;
- submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;
- reset counter V302;
- start timer T302 when the MAC layer indicates success or failure in transmitting the message.

8.3.1.6 Reception of the CELL UPDATE CONFIRM/URA UPDATE CONFIRM message by the UE

When the UE receives a CELL UPDATE CONFIRM/URA UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U_RNTI, or;
- if the message is received on DCCH;

the UE shall:

- stop timer T302;
- act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following:
  - use the transport channel(s) applicable for the physical channel types that is used; and
  - if the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s):
    - use the TFS given in system information.
  - if none of the TFS stored is compatible with the physical channel:
    - delete the stored TFS;
    - use the TFS given in system information.
  - if the CELL UPDATE CONFIRM message includes the IE "RLC reset indicator (for C-plane)":
    - reset the RLC entities for RB 2, RB 3 and, if present, RB 4.
  - if the CELL UPDATE CONFIRM message includes the IE "RLC reset indicator (for U-plane)":
    - reset the AM RLC entities for RB 5 and upwards.
- enter a state according to subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

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

- ~~Unblock~~not prohibit periodical status transmission in RLC~~ in case it is blocked~~.

If the UE after state transition remains in CELL_FACH state, it shall

- start the timer T305 if timer T305 is not running and periodical cell update has been requested in system information block type 1;
- select PRACH according to subclause 8.6.6.2;
- select Secondary CCPCH according to subclause 8.6.6.5;~~.~~
- ~~unblock~~not prohibit periodical status transmission in RLC.~~C in case it is blocked.~~
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - ignore that IE and stop using DRX;

If the UE after state transition enters URA_PCH or CELL_PCH state, it shall

- ~~block~~prohibit periodical status transmission in RLC;
- clear the variable C_RNTI;
- stop using that C_RNTI just cleared fro the variable C_RNTI in MAC;
- start the timer T305 if timer T305 is not running and periodical URA update or cell update has been requested in system information block type 1;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
    - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging Occasion and PICH Monitoring Occasion as specified in 8.6.3.2 in CELL_PCH state.

If the UE after the state transition remains in CELL_FACH state and;

- the contents of the variable C_RNTI are empty;

it shall check the value of V302 and

- If V302 is equal to or smaller than N302:
    - set the content of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;
    - increment counter V302;
    - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- If V302 is greater than N302:
    - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
    - clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
    - release all its radio resources;
    - enter idle mode;
    - 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;
    - the procedure ends.

If the UE after the state transition remains in CELL_FACH state and

- a C-RNTI is stored in the variable C_RNTI;

  or

the UE after the state transition moves to another state than the CELL_FACH state;

the UE shall:

- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
    - include and set the IE "Radio bearer uplink ciphering activation time info" in any response message transmitted below to the value of that variable;

- set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry.
- if the variable PDCP_SN_INFO is non-empty:
  - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;
- transmit a response message as specified in subclause 8.3.1.7;
- clear the variable PDCP_SN_INFO;
- clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS.

The procedure ends.

3GPP TSG-RAN WG2#19 ***Tdoc R2-010551***
Sofia Antipolis, France, February 19th- 23rd 2000

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**665**	⌘ rev	**r1**	⌘ Current version:	**3.5.0** ⌘

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

Title: ⌘	Clarification of RB information parameter values for SRB0		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘		***Date:*** ⌘	2001-02-21
Category: ⌘	**F**	***Release:*** ⌘	R99
	Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	The RB information settings for SRB0 are neither signalled, nor specified in the standard. The proposal is to specify the values in ch. 13
Summary of change: ⌘	The proposal is to specify the RB information settings for SRB0 in ch. 13 Furthermore, clarification is added regarding how to specify logical channel specific transport formats, mainly for commen channels
Consequences if not approved: ⌘	The lack of specification of RB information settings may result in interoperability problems between UE and UTRAN

Clauses affected: ⌘	6.3, 8.6.6.5, 10.3.4.21, 10.3.5.23, 13.y (new)	
Other specs affected: ⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications	
Other comments: ⌘		

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6.3 Signalling Radio Bearers

The Radio Bearers available for usage by RRC messages using RLC-TM, RLC-UM and RLC-AM on the DCCH and CCCH are specified in the following. The UE and UTRAN shall select the radio bearers for RRC messages using RLC-TM, RLC-UM or RLC-AM on the DCCH and CCCH, according to the following:

- RB 0 shall be used for all messages sent on the CCCH (UL: RLC-TM, DL: RLC-UM).
- RB 1 shall be used for all messages sent on the DCCH, when using RLC unacknowledged mode (RLC-UM).
- RB 2 shall be used for all messages sent on the DCCH, when using RLC acknowledged mode (RLC-AM), except for except for the RRC messages carrying higher layer (NAS) signalling.
- RB 3 and optionally RB 4 shall be used by the RRC messages carrying higher layer (NAS) signalling and sent on the DCCH in RLC acknowledged mode (RLC-AM), as specified in subclause 8.1.8., 8.1.9 and 8.1.10.
- For RRC messages on the DCCH using RLC transparent mode (RLC-TM), the transparent signalling DCCH shall be used.
- RRC messages on the SHCCH are mapped either on RACH or on the USCH with the lowest assigned Transport Channel Id in the uplink and either on FACH or on the DSCH with the lowest assigned Transport Channel Id using RLC-TM.
  These messages are only specified for TDD mode.

The Radio Bearer configuration for SRB0 is specified in 13.y.

When an RRC message is transmitted in DL on CCCH or SHCCH using RLC UM, RRC should indicate to RLC that a special RLC length indicator should be used [16]. The UE shall assume that this indication has been given. The special length indicator indicates that an RLC SDU begins in the beginning of an RLC PDU.

8.6.6.5 Secondary CCPCH info

In UTRAN Connected mode, the UE shall select the Secondary CCPCH according to the following rules:

- in Cell_DCH state:
  - select Secondary CCPCH according to subclause 8.6.6.4;
- in Cell_FACH state:
  - select an SCCPCH from the SCCPCHs listed in System Information Block types 5 and 6 (SIB 5 and SIB 6) based on U-RNTI as follows:

    "Index of selected SCCPCH" = U-RNTI mod K,

    where K is equal to the number of listed SCCPCHs which carry a FACH (i.e., SCCPCHs carrying PCH only shall not be counted). These SCCPCHs shall be indexed from 0 to K-1in the order of their occurrence in SIB 5 and SIB 6, and "Index of selected SCCPCH" identifies the selected SCCPCH. SCCPCHs included in SIB 5 shall be indexed first.

  in Cell_PCH and URA_PCH states:

  - select an SCCPCH from the SCCPCHs listed in SIB 5 and SIB 6 based on U-RNTI as follows:

    "Index of selected SCCPCH" = U-RNTI mod K,

    where K is equal to the number of listed SCCPCHs which carry a PCH (i.e., SCCPCHs carrying FACH only shall not be counted). These SCCPCHs shall be indexed in the order of their occurrence in system information from 0 to K-1, and "Index of selected SCCPCH" identifies the selected SCCPCH.

UE shall set CFN in relation to SFN of current cell according to subclause 8.5.15.

<u>The UE shall support reception of all transport formats on all FACHs multiplexed on the selected S-CCPCH.</u>

10.3.4.21 RB mapping info

A multiplexing option for each possible transport channel this RB can be multiplexed on.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Information for each multiplexing option	MP	1 to <maxRBMuxOptions>		Note1
>RLC logical channel mapping indicator	CV-UL-RLCLogicalChannels		Boolean	TRUE indicates that the first logical channel shall be used for data PDUs and the second logical channel shall be used for control PDUs. FALSE indicates that control and data PDUs can be sent on either of the two logical channels.
>Number of uplink RLC logical channels	CV-*UL-RLC info*	1 to MaxLoCHperRLC		1 or 2 logical channels per RLC entity or radio bearer RLC [TS 25.322]
>>Uplink transport channel type	MP		Enumerated(DCH,RACH, CPCH,USCH)	CPCH is FDD only USCH is TDD only
>>ULTransport channel identity	CV-*UL-DCH/USCH*		Transport channel identity 10.3.5.18	This is the ID of a DCH or USCH (TDD only) that this RB could be mapped onto.
>>Logical channel identity	OP		Integer(1..15)	This parameter is used to distinguish logical channels multiplexed by MAC on a transport channel.
>>CHOICE *RLC size list*	MP			The RLC sizes that are allowed for this logical channel ~~Note 2~~ For radio bearers mapped to RACH, “Explicit list” is the only valid choice. The UE shall regard all other choices as undefined IE values and handle these as specified in 9.
>>>All			Null	All RLC sizes listed in the *Transport Format Set*. 10.3.5.23
>>>Configured			Null	The RLC sizes configured for this logical channel in the *Transport Format Set*. 10.3.5.23 if present in this message or in the previously stored configuration otherwise
>>>Explicit List		1 to <maxTF>		Lists the RLC sizes that are valid for the logical channel.
>>>>RLC size index	MP		Integer(1..maxTF)	The integer number is a reference to the *RLC size* which arrived at that position in the *Transport Format Set* 10.3.5.23
>>MAC logical channel priority	MP		Integer(1..8)	This is priority between a user's different RBs (or logical channels). [25.321]
>Downlink RLC logical channel info	CV-*DL-RLC info*			
>>Number of downlink RLC logical channels	*MD*	1 to MaxLoCHperRLC		1 or 2 logical channels per RLC entity or radio bearer RLC [TS 25.322] Default value is that parameter values for DL are exactly the same as for corresponding UL logical channel. In case two multiplexing options are specified for the UL, the first

				options shall be used as default for the DL. As regards to the IE "Channel type", rule is specified in 8.6.4.8.
>>>Downlink transport channel type	MP		Enumerated(DCH,FACH, DSCH)	
>>>DL Transport channel identity	CV-*DL-DCH/DSCH*		Transport channel identity 10.3.5.18	
>>>Logical channel identity	OP		Integer(1..15)	16 is reserved

Condition	Explanation
UL-RLC info	If "CHOICE Uplink RLC mode" in IE "RLC info" is present this IE is MP. Otherwise the IE is not needed.
DL-RLC info	If "CHOICE Downlink RLC mode" in IE "RLC info" is present this IE is MP. Otherwise the IE is not needed.
UL-RLCLogicalChannels	If "Number of uplink RLC logical channels" in IE "RB mapping info" is 2, then this is present. Otherwise this IE is not needed.
UL-DCH/USCH	If IE "Uplink transport channel type" is equal to "DCH" or "USCH" (TDD only) this IE is MP. Otherwise the IE is not needed.
DL-DCH/DSCH	If IE "Downlink transport channel type" is equal to "DCH" or "DSCH" this IE is MP. Otherwise the IE is not needed.

NOTE 1: In DCH state a logical channel may be mapped onto DCH and DSCH simultaneously, therefore maximum 4 different multiplexing options are possible in that case. In all other states maximum one RB multiplexing option is possible.

~~NOTE 2: For radio bearers mapped to RACH, the option to indicate that the RLC size list is configured with the transport format set for the transport channels is not applicable. That option would imply that the explicit specification of which transport format applies for which logical channel would be specified within IE "PRACH system information list".~~

10.3.5.23 Transport Format Set

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *Transport channel type*	MP			
>Dedicated transport channels				The transport channel that is configured with this TFS is of type DCH
>>Dynamic Transport Format Information	MP	1 to <maxTF>		Note 1
>>>RLC Size	MP		Integer(0..4992)	Unit is bits Note 2
>>>Number of TBs and TTI List	MP	1 to <maxTF>		Present for every valid number of TB's (and TTI) for this RLC Size.
>>>>Transmission Time Interval	CV-dynamicTTI		Integer(10,20,40,80)	Unit is ms.
>>>>Number of Transport blocks	MP		Integer(0..512)	Note 3
>>>CHOICE *Logical Channel List*	MP			The logical channels that are allowed to use this RLC Size For radio bearers mapped to RACH, the UE shall regard "Explicit list" as an undefined IE value and handle these as specified in 9. For the downlink, "ALL" is the only valid choice. The UE shall regard all other choices as undefined IE values and handle these as specified in 9. ~~Note 4, Note 5, Note 6~~
>>>>ALL			Null	All logical channels mapped to this transport channel.
>>>>Configured			Null	The logical channels configured to use this RLC size in the *RB mapping info*. 10.3.4.21 if present in this message or in the previously stored configuration otherwise
>>>>Explicit List		1 to 15		Lists the logical channels that are allowed to use this RLC size.
>>>>>RB Identity	MP		RB identity 10.3.4.16	
>>>>>LogicalChannel	CH-UL-RLCLogicalChannels		Integer(0..1)	Indicates the relevant UL logical channel for this RB. "0" corresponds to the first, "1" corresponds to the second UL logical channel configured for this RB in the IE "RB mapping info".
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.11	
>Common transport channels				The transport channel that is configured with this TFS is of a type not equal to DCH
>>Dynamic Transport Format Information	MP	1 to <maxTF>		Note
>>>RLC Size	MP		Integer(0..4992)	Unit is bits Note 2

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>>Number of TBs and TTI List	MP	1 to <maxTF>		Present for every valid number of TB's (and TTI) for this RLC Size.
>>>>Number of Transport blocks	MP		Integer(0..512)	Note 3
>>>>CHOICE mode	MP			
>>>>>FDD				(no data)
>>>>>TDD				
>>>>>> Transmission Time Interval	CV-dynamicTTI		Integer(10,20,40,80)	Unit is ms.
>>>CHOICE *Logical Channel List*	MP			The logical channels that are allowed to use this RLC Size
>>>>ALL			Null	All logical channels mapped to this transport channel.
>>>>Configured			Null	The logical channels configured to use this RLC size in the *RB mapping info*. 10.3.4.21 if present in this message or in the previously stored configuration otherwise
>>>>Explicit List		1 to 15		Lists the logical channels that are allowed to use this RLC size.
>>>>>RB Identity	MP		RB identity 10.3.4.16	
>>>>>LogicalChannel	CV-UL-RLCLogicalChannels		Integer(0..1)	Indicates the relevant UL logical channel for this RB. "0" corresponds to the first, "1" corresponds to the second UL logical channel configured for this RB in the IE "RB mapping info".
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.11	

Condition	Explanation
dynamicTTI	This IE is included if dynamic TTI usage is indicated in IE Transmission Time Interval in Semi-static Transport Format Information. Otherwise it is not needed.
UL-RLCLogicalChannels	If "Number of uplink RLC logical channels" in IE "RB mapping info" in this message is 2 or the IE "RB mapping info" is not present in this message and 2 UL logical channels are configured for this RB, then this IE is present. Otherwise this IE is not needed.

NOTE 1: The first instance of the parameter *Number of TBs and TTI List* within the *Dynamic transport format information* correspond to transport format 0 for this transport channel, the second to transport format 1 and so on. The total number of configured transport formats for each transport channel does not exceed <maxTF>.

NOTE: The parameter "rate matching attribute" is in line with the RAN WG1 specifications. However, it is not currently in line with the description in 25.302.

NOTE 2: For dedicated channels, 'RLC size' reflects RLC PDU size. In FDD for common channels 'RLC size' reflects actual TB size. In TDD for common channels since MAC headers are not octet aligned, to calculate TB size the MAC header bit offset is added to the specified size (similar to the dedicated case). Therefore for TDD DCH TrCHs the 4 bit C/T is added if MAC multiplexing is applied, for FACH the 3 bit TCTF offset is added and for RACH the 2 bit TCTF offset is added.

NOTE 3: If the number of transport blocks <> 0, and Optional IE "CHOICE RLC mode" or "CHOICE Transport block size is absent, it implies that no RLC PDU data exists but only parity bits exist. If the number of transport blocks = 0, it implies that neither RLC PDU data nor parity bits exist. In order to ensure the possibility of CRC based Blind Transport Format Detection, UTRAN should configure a transport format with number of transport block <> 0, with a zero-size transport block.

~~NOTE 4: For RACH, the option to explicitly specify which transport format applies for which logical channel is not applicable since this information is included within IE "PRACH system information list".~~

~~NOTE 5: Although the need for IE "Logical channel list" is MP, the specification of restrictions regarding the use of transport formats on different logical channels only applies for uplink. Therefore, for the downlink only choice "all" applies.~~

~~NOTE 6: For radio bearers mapped onto FACH, the UE shall support reception of all transport formats on all FACHs multiplexed on the selected S-CCPCH.~~

13.y RB information parameters for SRB 0

~~The Radio Bearer configuration for SRB0 is not flexible, meaning the parameter values are not signalled.~~ The following Radio Bearer parameter values apply for SRB0:

Information element/ Group name	**Value**	**Comment**
RLC info		
>Uplink RLC mode	TM	
>>Transmission RLC discard	No discard	Neither discard is used, nor will there be a reset
>>Segmentation indication	FALSE	
>Downlink RLC mode	UM	
RB mapping info		Single multiplexing option
>Uplink mapping info		
>>UL transport channel	RACH	RACH corresponding with selected PRACH
>>RLC size list	N/A	The first TB defined in the Transport Format Set for the transport channel that is used
>Downlink mapping info		
>>DL transport channel	FACH	~~The UE shall support reception of all FACHs on the selected S-CCPCH~~

~~NOTE The UE shall support reception of all TB sizes for all FACHs on the selected S-CCPCH~~

3GPP TSG-RAN WG2#19 ***Tdoc R2-010387***
Sofia Antipolis, France, February 19th- 23rd 2000

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**666**	⌘ rev	**-**	⌘ Current version:	**3.5.0**	⌘

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

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

Title:	⌘	Encoding for RRC- container		
Source:	⌘	TSG-RAN WG2		
Work item code:	⌘		***Date:*** ⌘	2001-02-14
Category:	⌘	**F**	***Release:*** ⌘	R99
		Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change:	⌘	There is a misalignment between the R2 and R3 assumptions concerning the encoding of the RRC container.
Summary of change:	⌘	The proposal is to align 25.331 with the R3 assumption that the RRC container is an octet string
Consequences if not approved:	⌘	The misalignment between the current specifications remains

Clauses affected:	⌘	14.12	
Other specs affected:	⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘
Other comments:	⌘		

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

14.12 Provision and reception of RRC information between network nodes

In certain cases, e.g., when performing handover to UTRAN or when performing SRNC relocation, RRC information may need to be transferred between other RATs and UTRAN or between UTRAN nodes within UTRAN. In the following, the details of the RRC information to be transferred are specified per direction.

Like for the Uu interface, the transfer syntax for RRC transferred between UTRAN network nodes and/or between UTRAN and other RATs is derived from their ASN.1 definitions by use of Packed Encoding Rules, unaligned (X.691). It should be noted that the encoder adds final padding to achieve octet alignment. The resulting octet string is, carried in a container, transferred between the network nodes.~~However, this final padding shall not be part of the RRC information transferred between the network nodes, which means that the result is a bit string.~~

3GPP TSG-RAN WG2#19 ***Tdoc R2-010595***
Sofia Antipolis, France, February 19th- 23rd 2000

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**667**	⌘ rev	**r2**	⌘ Current version:	**3.5.0**	⌘

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

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

Title: ⌘	Update of message extension and encoding descriptions		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘		***Date:*** ⌘	2001-02-21
Category: ⌘	**F**	***Release:*** ⌘	R99
	Use <u>one</u> of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use <u>one</u> of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	The RRC description concerning protocol extensions and PDU construction is not in accordance and with the principles agreed used within the ASN.1
Summary of change: ⌘	The description is updated in accordance with the agreed principles Furthermore, clarification is added that the 12/97 version of the ASN.1 specifications apply, which is in accordance with what was agreed long time ago (R2#9 meeting).
Consequences if not approved: ⌘	Ambiguity/ misalignment between different parts of the specification remains

Clauses affected: ⌘	2, 10.1.1, 10.1.1.1, 10.1.1.2, 12, 12.1.3	
Other specs affected: ⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘
Other comments: ⌘	The changes introduced in r1 of this CR are shown by separate revision marks	

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

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

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

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

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

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

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

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

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

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

[10] 3GPP TS 25.402: "Synchronization in UTRAN, stage 2".

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

10 Message and information element functional definition and content

10.1 General

The function of each Radio Resource Control message together with message contents in the form of a list of information elements is defined in subclause 10.2.

Functional definitions of the information elements are then described in subclause 10.3.

Information elements are marked as either MP- Mandatory present, MD - Mandatory with default value, OP - Optional, CV - Conditional on value or CH -Conditional on history (see Table 10.1 with information extracted from [14]).

Table 10.1: Meaning of abbreviations used in RRC messages and information elements

Abbreviation	Meaning
MP	Mandatory present A value for that information is always needed, and no information is provided about a particular default value. If ever the transfer syntax allows absence (e.g., due to extension), then absence leads to an error diagnosis.
MD	Mandatory with default value A value for that information is always needed, and a particular default value is mentioned (in the 'Semantical information' column). This opens the possibility for the transfer syntax to use absence or a special pattern to encode the default value.
CV	Conditional on value A value for that information is needed (presence needed) or unacceptable (absence needed) when some conditions are met that can be evaluated on the sole basis of the content of the message. If conditions for presence needed are specified, the transfer syntax must allow for the presence of the information. If the transfer syntax allows absence, absence when the conditions for presence are met leads to an error diagnosis. If conditions for absence needed are specified, the transfer syntax must allow to encode the absence. If the information is present and the conditions for absence are met, an error is diagnosed. When neither conditions for presence or absence are met, the information is treated as optional, as described for 'OP'.
CH	Conditional on history A value for that information is needed (presence needed) or unacceptable (absence needed) when some conditions are met that must be evaluated on the basis of information obtained in the past (e.g., from messages received in the past from the other party). If conditions for presence needed are specified, the transfer syntax must allow for the presence of the information. If the transfer syntax allows absence, absence when the conditions for presence are met leads to an error diagnosis. If conditions for absence needed are specified, the transfer syntax must allow to encode the absence. If the information is present and the conditions for absence are met, an error is diagnosed. When neither conditions for presence or absence are met, the information is treated as optional, as described for 'OP'.
OP	Optional The presence or absence is significant and modifies the behaviour of the receiver. However whether the information is present or not does not lead to an error diagnosis.

10.1.1 Protocol extensions

RRC messages may be extended in future releases, either by adding values for choices, enumerated and size constrained types or by additi~~ting~~ information elements. An important aspect concerns ~~In this specification, two kind of protocol extensions are distinguished:~~

- ~~extension of an information element with additional values or choices;~~
- ~~extension of a message with additional information elements.~~

~~This standard fully specifies~~ the behaviour of ~~the~~ a UE, conforming to this revision of the standard, upon receiving a not comprehended future extension. The details of this error handling behaviour are provided in clause 9.

NOTE 1: By avoiding the need for partial decoding (skipping uncomprehended IEs to continue decoding the remainder of the message), the RRC protocol extension mechanism also avoids the overhead of length determinants for extensions.

Two kinds of protocol extensions are distinguished: non- critical and critical extensions. In general, a receiver shall process a message including not comprehended non- critical extensions as if the extensions were absent. However, a receiver shall entirely reject a message including not comprehended critical extensions ~~entirely~~ (there is no partial rejection) and notify the sender.

The general mechanism for adding critical extensions is by defining a new version of the message, which is indicated at the beginning of the message.

The ~~UE shall support all protocol versions preceeding the latest revision supported by the UE. Moreover, the~~ UE shall al~~l~~ways comprehend the complete~~ly~~ transfer syntax specified for the protocol version it supports ~~a version of the protocol~~; if the UE comprehends ~~information elements corresponding with~~ the transfer syntax defined within protocol version A for ~~within~~ message 1, it shall also comprehend the transfer syntax defined within protocol version A ~~the information elements corresponding with version A within~~ for message 2.

The following table shows for which messages only non- critical extensions may be added while for others both critical and non- critical extensions may be added.

NOTE 2: ~~While non- critical extensions can be added to all messages, c~~Critical extensions can only be added to the downlink messages, with the exception of the SYSTEM INFORMATION message. ~~This is shown in the following table, that also clarifies that for system information non critical extensions may be added to system information blocks only.~~

~~10.1.1.1 Extension of an information element with additional values or choices~~

~~In future releases of this protocol, some of the value ranges and choices may be extended. For these value ranges and choices, one or more additional values are reserved. The size of the encoded information element shall not depend on whether or not the values reserved for extension are used. Information elements applicable to choices reserved for future releases of the protocol, shall be added to the end of the message.~~

~~For each of the values and choices reserved for future extension, the behaviour of a UE conforming to this revision of the standard is defined within the message and information element specifications provided in subclause 10.1 and 10.2. The UE may either apply a defined value, ignore the information element and/ or reject the request entire message. Which action applies is indicated within the "semantics" column of the tables specifying the messages and information elements as the "criticality" ("default", "ignore" or "reject").~~

~~10.1.1.2 Extension of a message with additional information elements~~

~~In future releases of this protocol, RRC messages may be extended with new information elements. These additional information elements shall always be included at the end of the message.~~

~~UTRAN is able to control the behaviour of a UE receiving a message extended with a not comprehended additional information element by indicating for each extension the "criticality" which may be "ignore" or "reject". Therefore UTRAN indicates the criticality for extensions provided in all messages it sends towards the UE, with the exception of broadcast messages. In the direction from UE to UTRAN, not criticality information is included for protocol extensions added at the end of a message. This is shown in the following table. Furthermore, the table indicates at which level extensions are included for the SYSTEM INFORMATION message.~~

~~Type~~Extensions	Message
~~Extensions and criticality~~Critical and non-critical extensions	ACTIVE SET UPDATE 10.2.1 ASSISTANCE DATA DELIVERY 10.2.4 CELL CHANGE ORDER FROM UTRAN 10.2.5 CELL UPDATE CONFIRM 10.2.8~~5~~ COUNTER CHECK 10.2.9 DOWNLINK DIRECT TRANSFER 10.2.11 ~~DOWNLINK OUTER LOOP CONTROL 10.2.9~~ HANDOVER TO UTRAN COMMAND 10.2.12 HANDOVER FROM UTRAN COMMAND10.2.15 MEASUREMENT CONTROL10.2.17 ~~PAGING TYPE 110.2.20~~ ~~PAGING TYPE 210.2.21~~ PHYSICAL CHANNEL RECONFIGURATION10.2.22 PHYSICAL SHARED CHANNEL ALLOCATION10.2.25 RADIO BEARER RECONFIGURATION10.2.27 RADIO BEARER RELEASE10.2.30 RADIO BEARER SETUP10.2.33 RRC CONNECTION REJECT10.2.36 RRC CONNECTION RELEASE10.2.37 RRC CONNECTION SETUP10.2.40 SECURITY MODE COMMAND10.2.43 SIGNALLING CONNECTION RELEASE10.2.46 ~~SIGNALLING CONNECTION RELEASE REQUEST10.2.47~~ TRANSPORT CHANNEL RECONFIGURATION10.2.50 TRANSPORT FORMAT COMBINATION CONTROL10.2.53 UE CAPABILITY ENQUIRY10.2.55 UE CAPABILITY INFORMATION CONFIRM10.2.57 UPLINK PHYSICAL CHANNEL CONTROL10.2.59 URA UPDATE CONFIRM10.2.61 UTRAN MOBILITY INFORMATION10.2.62
Non- critical e~~E~~xtensions only	ACTIVE SET UPDATE COMPLETE 10.2.2 ACTIVE SET UPDATE FAILURE 10.2.3 CELL CHANGE ORDER FROM UTRAN FAILURE 10.2.6 CELL UPDATE 10.2.7 COUNTER CHECK RESPONSE 10.2.10 HANDOVER TO UTRAN COMPLETE10.2.13 INITIAL DIRECT TRANSFER10.2.14 HANDOVER FROM UTRAN FAILURE10.2.16 MEASUREMENT CONTROL FAILURE10.2.18 MEASUREMENT REPORT10.2.19 PAGING TYPE 1 10.2.20 PAGING TYPE 2 10.2.21 PHYSICAL CHANNEL RECONFIGURATION COMPLETE10.2.23 PHYSICAL CHANNEL RECONFIGURATION FAILURE10.2.24 PUSCH CAPACITY REQUEST10.2.26 RADIO BEARER RECONFIGURATION COMPLETE10.2.28 RADIO BEARER RECONFIGURATION FAILURE10.2.29 RADIO BEARER RELEASE COMPLETE10.2.31 RADIO BEARER RELEASE FAILURE10.2.32 RADIO BEARER SETUP COMPLETE10.2.34 RADIO BEARER SETUP FAILURE10.2.35 RRC CONNECTION RELEASE COMPLETE10.2.38 RRC CONNECTION REQUEST10.2.39 RRC CONNECTION SETUP COMPLETE10.2.41 RRC STATUS10.2.42 SECURITY MODE COMPLETE10.2.44 SECURITY MODE FAILURE10.2.45 SIGNALLING CONNECTION RELEASE REQUEST10.2.47 Master Information Block10.2.48.8.1 System Information Block type 1 to System Information Block type 1710.2.48.8.2 to10.2.48.8.19 SYSTEM INFORMATION CHANGE INDICATION10.2.49 TRANSPORT CHANNEL RECONFIGURATION COMPLETE10.2.51 TRANSPORT CHANNEL RECONFIGURATION FAILURE10.2.52 TRANSPORT FORMAT COMBINATION CONTROL FAILURE10.2.54 UE CAPABILITY INFORMATION10.2.56

~~Type~~Extensions	Message
	UPLINK DIRECT TRANSFER10.2.58 URA UPDATE10.2.60 UTRAN MOBILITY INFORMATION CONFIRM10.2.63 UTRAN MOBILITY INFORMATION FAILURE10.2.64
No~~ne~~ extensions	SYSTEM INFORMATION10.2.48 First Segment10.2.48.1 Subsequent or last Segment10.2.48.3 Complete SIB10.2.48.5 SIB content10.2.48.8.1

NOTE ~~1~~: For the SYSTEM INFORMATION message protocol extensions are only possible at the level of system information blocks. If extension is needed at the level of SYSTEM INFORMATION, another message should be defined.

~~The "Extensions and criticality" may include both critical and non- critical extensions. Within the encoded message, the critical extensions shall always appear before non-critical extensions.~~

~~NOTE 2: The above implies that a UE may stop decoding upon the first not comprehended IE it encounters.~~

~~The UE shall comprehend all information elements within a message upto the revision of the protocol it supports for the concerned message.~~

10.1.1.1 Non critical extensions

Extension of an information element with additional values or choices

In future releases, non critical values may be added to choices, enumerated and size constrained types. ~~The size of the encoded information element shall not depend on whether or not the values reserved for extension are used.~~

For choices, enumerated and size constrained types it is possible to indicate how many non critical spare values need to be reserved for future extension. The number of spare values is specified within the ASN.1 type definitions; the tabular format only indicates that at least one spare value is needed. This kind of extension is allowed only for items with need set to OP or MD, ~~in which case~~and the receiver shall interpret the reception of a spare as absence of the IE and as reception of the default value respectively.

Information elements applicable to choices reserved for future releases of the protocol shall be added to the end of the message.

Extension of a message with additional information elements

In future releases, non critical information elements may be added to RRC messages. These additional information elements shall be appended at the end of the message; the transfer syntax specified in this revision of the standard facilitates this. A receiver conformant to this revision of the standard shall accept such extension, and proceed as if it was not included~~These additional information elements shall always be included at the end of the message. A receiver not comprehending such a protocol extension should proceed as if the extension was not included in the received message~~.

~~NOTE: The above implies that a UE may stop decoding upon the first not comprehended IE it encounters.~~

10.1.1.2 Critical extensions

Extension of an information element with additional values or choices

All choices, enumerated and size constrained types can be extended with critical values. For extension with critical values the general critical extension mechanism is used i.e. for this no spare value are reserved since backward compatibility is not required.

Extension of a message with additional information elements

In future releases of this protocol, RRC messages may be extended with new information elements. Since messages including critical extensions are rejected by receivers not comprehending them, these messages may be modified completely e.g. IEs may be inserted at any place and IEs may be removed or redefined.

12 Message transfer syntax

Transfer syntax for RRC PDUs is derived from their ASN.1 definitions by use of Packed Encoding Rules, unaligned as specified in ~~(~~X.691 [24]~~)~~, and with adapted final padding. If special encoding is used, it is indicated in the ECN module defined for each ASN.1 module. How special encoding is used is defined in TR 25.921.

12.1 Structure of encoded RRC messages

An RRC PDU, which is the bit string that is exchanged between peer entities/ across the radio interface, is the concatenation of a basic production, an extension and padding, in that order.

12.1.1 Basic production

The 'basic production' is obtained by applying UNALIGNED PER to the abstract syntax value (the ASN.1 description) as specified in X.691, except for the 0 to 7 bits added at the end to produce a multiple of 8 bits. The basic production can have any positive number of bits, not necessarily a multiple of 8 bits.

12.1.2 Extension

Emitters compliant with this version of the specification of the protocol shall, unless indicated otherwise on a PDU type basis, set the extension part empty. Emitters compliant with a later version might send non empty extensions.

12.1.3 Padding

Emitters compliant with this version of the specification of the protocol shall, unless indicated otherwise on a PDU type basis, pad the basic production with the smallest number of bits required to meet the size constraints of the lower layers. Padding bits shall be set to 0.

Receivers compliant with this version of the specification have no need to distinguish the extension and padding parts, and shall, unless indicated otherwise on a PDU type basis, accept RRC PDUs with any bit string in the extension and padding parts.

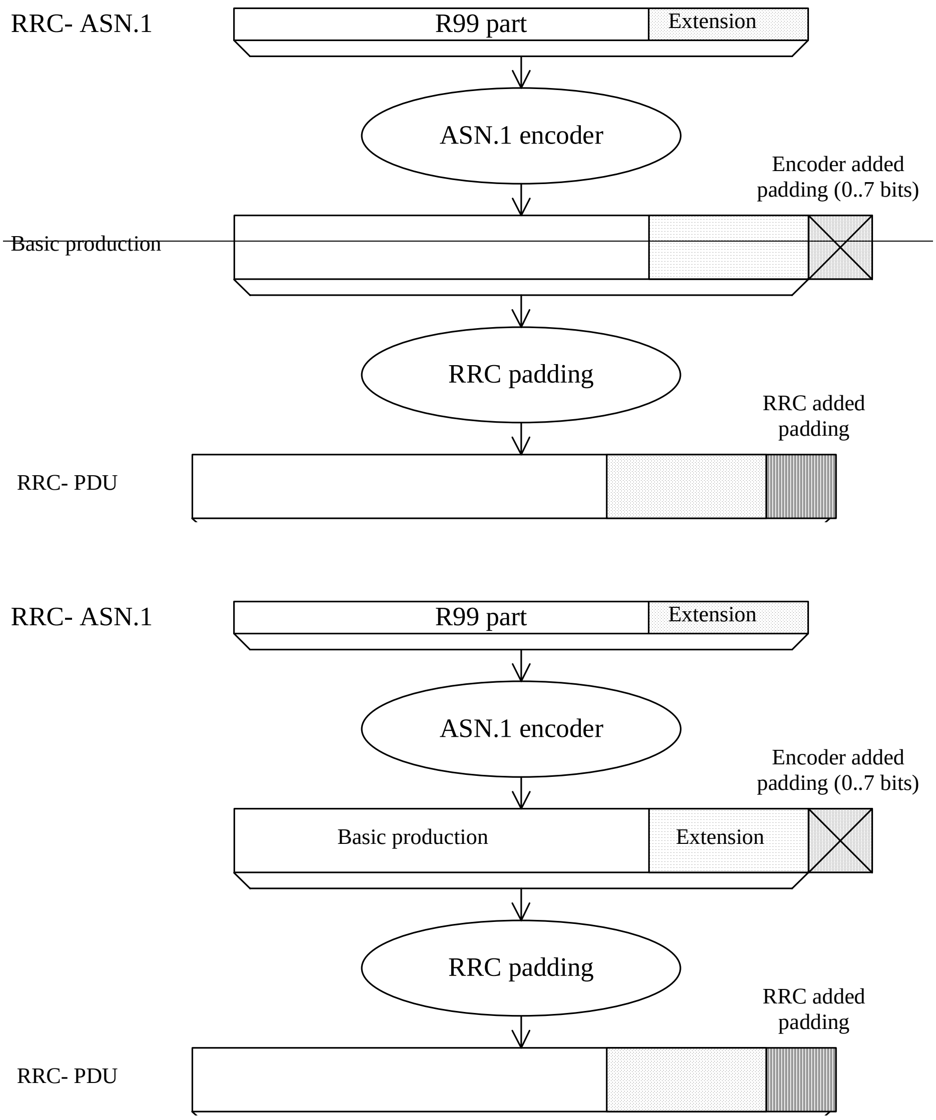
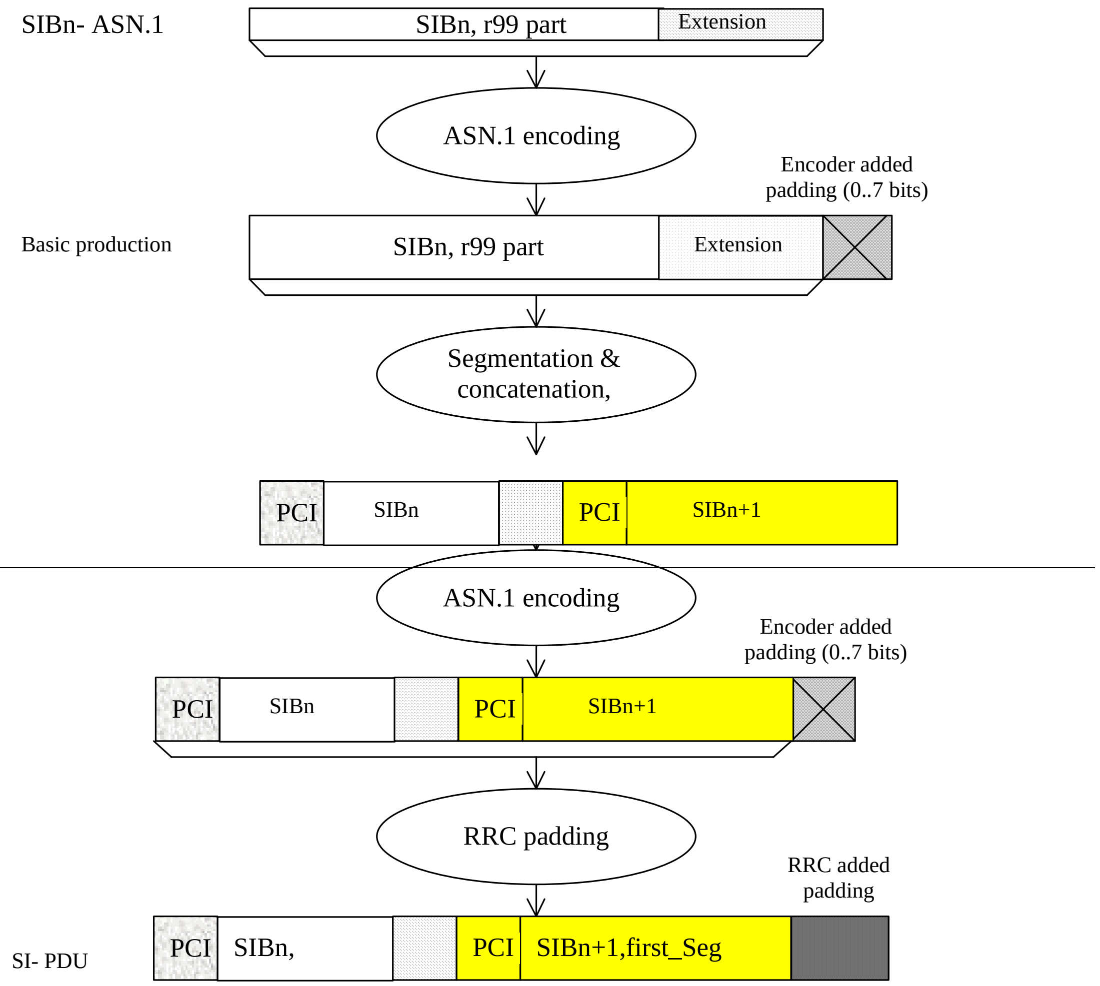


Figure 61: Padding

When using AM or UM mode, RLC requires that the RRC PDU length is a multiple of 8 bits.

When using Tr mode, RLC does neither impose size requirements nor perform padding. This implies that RRC has to take into account the transport format set defined for the transport channel across which the message is to be sent. RRC shall select the smallest transport format that fits the RRC PDU and shall add the lowest number of padding bits required to fit the size specified for the selected transport format.

For system information blocks, building the PDU involves two steps. The first step is the building of the SIBs, in which step padding is not applied (the rules for extension apply). The second step is the building of the RRC PDUs, involving segmentation and concatenation of SIBs, and then padding as described above for Tr mode. The procedure is shown by means of an example as described in Figure 62. The example includes two SIBs, SIBn and SIBn+1, of which only SIBn includes a protocol extension. The two SIBS used in the example don't require segmentation and are concatenated into one SYSTEM INFORMATION message.


SIBn- ASN.1
SIBn, r99 part
Extension
ASN.1 encoding
Encoder added padding (0..7 bits)
Basic production
SIBn, r99 part
Extension
Segmentation & concatenation,
PCI
SIBn
PCI
SIBn+1
ASN.1 encoding
Encoder added padding (0..7 bits)
PCI
SIBn
PCI
SIBn+1
RRC padding
RRC added padding
SI- PDU
PCI
SIBn,
PCI
SIBn+1,first_Seg

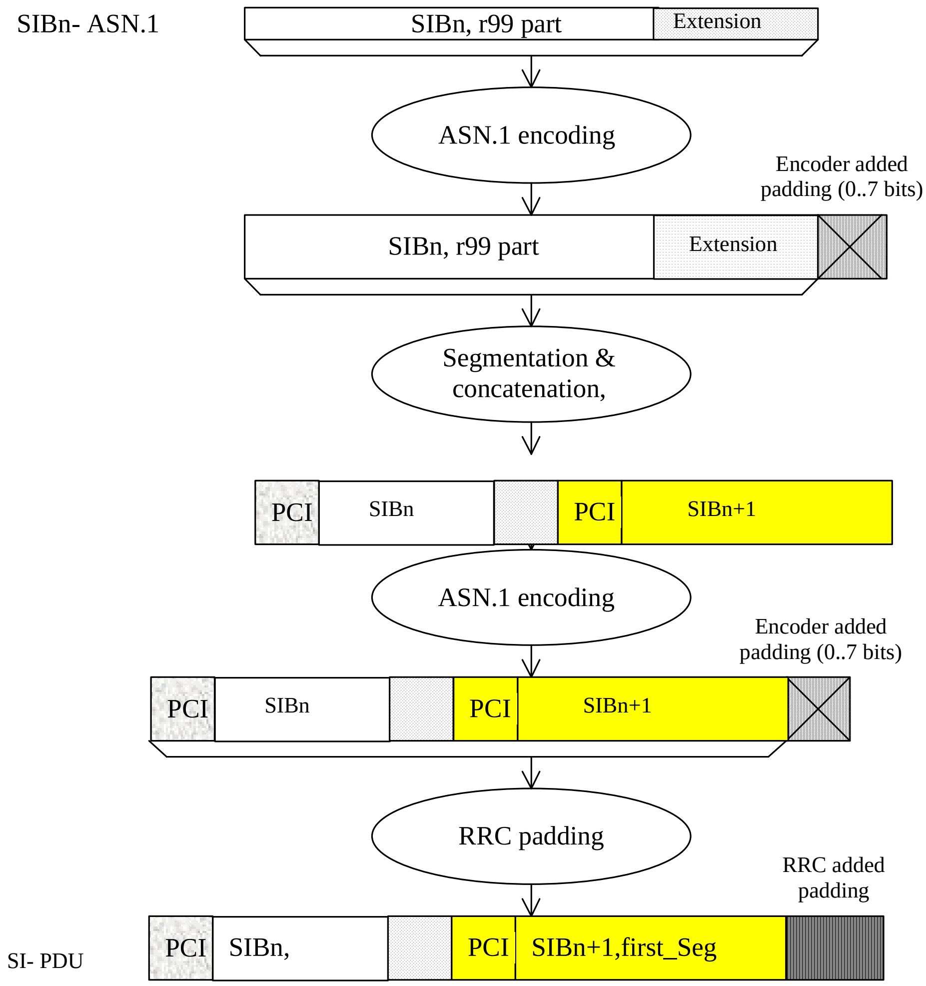


Figure 62: Padding for System Information

PCI: Protocol control information at SYSTEM INFORMATION message level

SI: SYSTEM INFORMATION message

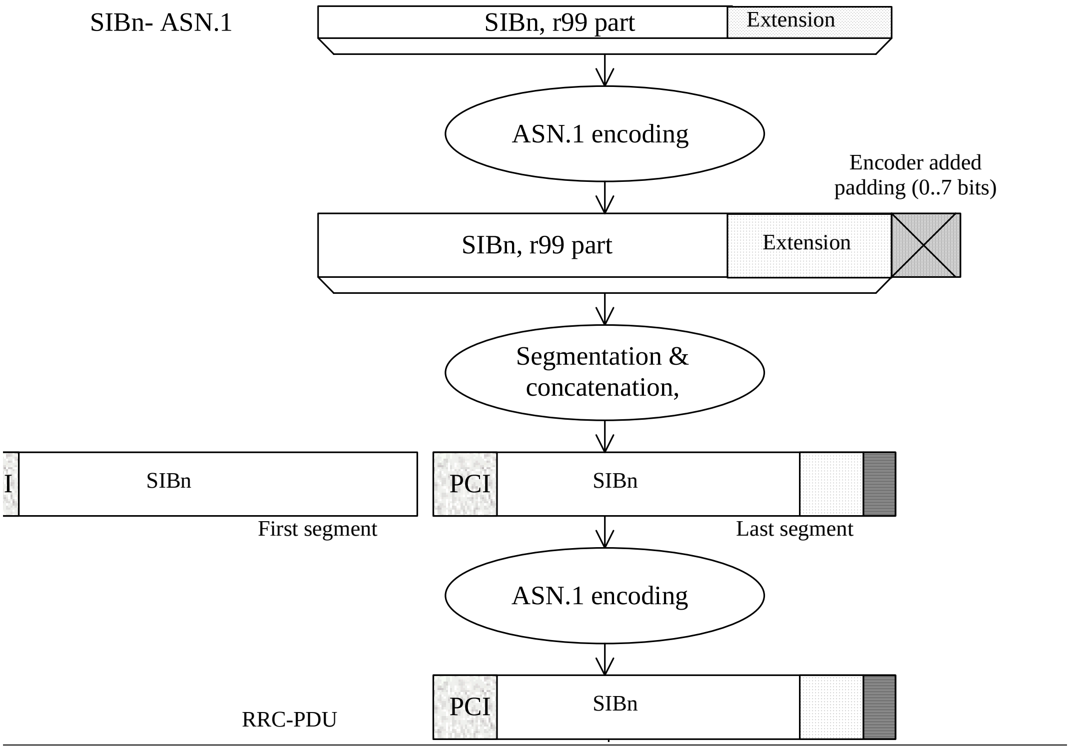
For system information blocks, RRC may also add padding information at the end of IE "SIB data fixed", used both within IE "Last segment" and IE "Complete SIB". The IE "SIB data fixed" has a fixed length i.e. no length denominator used. In case the remaining amount of "SIB data" information is insufficient to fill the IE completely, RRC includes padding bits.

Since no length denominator is included, the receiving RRC can not remove the padding added by the sender. However, since the padding used is the same as the padding added by the PER encoder to achieve octet alignment, the receiver can handle it.

NOTE 1 The abovely described mechanism implies that the PDU provided to the ASN.1 decoder may have more than 7 padding bits included. For a complete SIB of length 215 bits, 11 padding bits are added by RRC. Since the decoder requires an octet aligned input, 6 additional bits need to be added. In this (worst) case, a total of 17 padding bits is included.

NOTE 2 For the above cases, use of padding bits is possible and more efficient than including a length denominator.

When using the abovely described RRC padding, the segment has a fixed length which completely fills the transport block. Therefore, in this case no RRC padding is added within the SYSTEM INFORMATION message. This is illustrated by means of the following figure.



3GPP TSG-RAN WG2 Meeting #19
Sophia Antipolis, February 19th-23rd 2001

Tdoc R2-010673

CR-Form-v3

CHANGE REQUEST

⌘ **25.331 CR 669** ⌘ rev **r2** ⌘ Current version: **3.5.0** ⌘

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

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

Title: ⌘ Security corrections

Source: ⌘ TSG-RAN WG2

Work item code: ⌘

Date: ⌘ 2001-02-21

Category: ⌘ **F**

Release: ⌘ R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

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

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

Reason for change: ⌘ Minor errors and unclear statements in the specification of integrity protection and ciphering related RRC procedures.

Summary of change: ⌘ The UE selection on uplink activation time on CCCH for integrity protection reconfiguration is clarified. To be able to send CELL UPDATE messages using the old configuration during the security reconfiguration, it should be for RB0 set to at least the current RRC sequence number plus N302+1.

The "obvious" fact that the UE shall apply the new integrity configuration according at the RRC sequence numbers sent to UTRAN in the response message has been written down. For the response message itself the new configuration is applied directly.

The procedure "Cipher activation time too short" has been removed since the UE can not identify when the activation time has elapsed.

Clarifications made on activation of integrity protection:
1. A new variable INTEGRITY_PROTECTION_ACTIVATION_INFO has been added for storage of the uplink RRC sequence numbers to be sent in the corresponding IE in the response message.
2. Since the new integrity protection configuration is activated at the RRC sequence numbers used at the transmission of the corresponding messages, it is clarified that the RRC sequence number for RB2 sent in the IE "Integrity protection activation info" shall be ignored in both downlink and uplink messages.

Clarification that the UE shall not increment the RRC sequence number when retransmitting UE CAPABILITY INFORMATION and RRC CONNECTION RELEASE COMPLETE.

The RRC message, ASSISTANCE DATA DELIVERY and SIGNALLING CONNECTION RELEASE REQUEST should include the IE "Integrity Check info". This is already included in the ASN.1 but missing from the tabular format.

The references and text are updated to correctly refer to 3GPP TS 33.102.

		The definition of START (8.5.9) is clarified due to the case when a radio bearer which has the highest HFNfor all RBs is released will result in the START value being decremented to the radio bearer with the next highest HFN. START should only be updated upon change of HFN of the radio bearer with the highest HFN.
Consequences if not approved:	⌘	Without these changes the security procedures are ambiguously specified. Also, CELL UPDATE could never be handled during a Security mode control procedure, unnecessarily resulting in a released connection.

Clauses affected:	⌘	2, 8.1.4.6, 8.1.6.6, 8.1.12.3, 8.1.12.4, 8.2.2.3, 8.2.2.4, 8.3.1.6, 8.3.3.3, 8.3.4.3, 8.5.8, 8.5.9, 8.5.10, 8.5.10.1, 8.5.10.2, 8.5.10.3, 8.6.3.4, 8.6.3.5, 10.2.4, 10.2.7, 10.2.13, 10.2.41, 10.2.47, 10.3.3.16, 10.3.3.17, 10.3.3.19, 10.3.3.38, 13.4.10, 13.4.10a (new), 14.13.2.2		
Other specs affected:	⌘	☐ Other core specifications	⌘	
		☐ Test specifications		
		☐ O&M Specifications		
Other comments:	⌘	This CR adds a variable INTEGRITY_PROTECTION_ACTIVATION_INFO, which is referred to in the CR 660 from RAN2#19.		

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

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

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

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

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

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

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

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

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

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

[10] 3GPP TS 25.402: "Synchronization in UTRAN, stage 2".

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

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

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

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

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

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

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

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

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

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

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

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

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

[24] 3GPP TS 33.102: " Security Architecture ".

8.1.4.6 Expiry of timer T308, unacknowledged mode transmission

When in state CELL_DCH and the timer T308 expires, the UE shall:

- increment V308 by one;
- if V308 is equal to or smaller than N308:
  - retransmit the RRC CONNECTION RELEASE COMPLETE message, without incrementing "Uplink RRC Message sequence number" for RB#1 in the variable INTEGRITY_PROTECTION_INFO;
- if V308 is greater than N308:
  - release all its radio resources;
  - enter idle mode;
  - perform the actions specified in subclause 8.5.2 when entering idle mode;
  - And the procedure ends.

8.1.6.6 T304 timeout

Upon expiry of timer T304, the UE shall check the value of V304 and:

- if V304 is smaller than or equal to N304:
  - retransmit a UE CAPABILITY INFORMATION message with the IEs as set in the last unsuccessful attempt, without incrementing "Uplink RRC Message sequence number" for RB#2 in the variable INTEGRITY_PROTECTION_INFO;
  - restart timer T304;
  - increment counter V304;
- if V304 is greater than N304:
  - assume that radio link failure has occurred;
  - initiate the RRC connection re-establishment procedure.

8.1.12 Security mode control

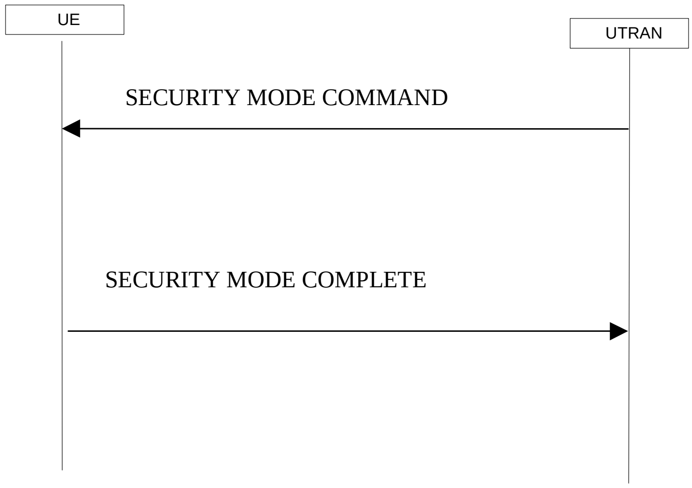


Figure 18: Security mode control procedure

8.1.12.1 General

The purpose of this procedure is to trigger the stop or start of ciphering or to command the restart of the ciphering with a new ciphering configuration, both for the signalling link and for any of the radio bearers.

It is also used to start integrity protection or to modify the integrity protection configuration for uplink and downlink signalling.

8.1.12.2 Initiation

8.1.12.2.1 Ciphering configuration change

To stop or start/restart ciphering, UTRAN sends a SECURITY MODE COMMAND message on the downlink DCCH in AM RLC using the old ciphering configuration. If no old ciphering configuration exists then the SECURITY MODE COMMAND is not ciphered.

Prior to sending the SECURITY MODE COMMAND, for the CN domain indicated in the IE "CN domain identity" in the SECURITY MODE COMMAND, UTRAN should:

- suspend all radio bearers using RLC-AM and RLC-UM;
- suspend all signalling radio bearers using RLC-AM and RLC-UM, except the signalling radio bearer used to send the SECURITY MODE COMMAND message on the downlink DCCH in RLC-AM;
- set, for the signalling radio bearer used to send the SECURITY MODE COMMAND, the "RLC send sequence number" in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info", at which time the new ciphering configuration shall be applied;
- include "Ciphering activation time for DPCH" in IE "Ciphering mode info" when a DPCH exists for radio bearers using transparent mode RLC;
- set, for each suspended radio bearer and signalling radio bearer, the "RLC send sequence number" in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info", at which time the new ciphering configuration shall be applied.

While suspended, radio bearers and signalling radio bearers shall not deliver RLC PDUs with sequence number greater than or equal to the number in IE "Radio bearer downlink ciphering activation time info".

When the successful delivery of the SECURITY MODE COMMAND has been confirmed by RLC, UTRAN shall:

- resume all the suspended radio bearers and signalling radio bearers. The old ciphering configuration shall be applied for the transmission of RLC PDUs with RLC sequence number less than the number indicated in the IE "Radio bearer downlink ciphering activation time info", as sent to the UE. The new ciphering configuration shall be applied for the transmission of RLC PDUs with RLC sequence number greater than or equal to the number indicated in IE "Radio bearer downlink ciphering activation time info", sent to the UE.

8.1.12.2.2 Integrity protection configuration change

To start or modify integrity protection, UTRAN sends a SECURITY MODE COMMAND message on the downlink DCCH in AM RLC using the new integrity protection configuration.

8.1.12.3 Reception of SECURITY MODE COMMAND message by the UE

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

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

- suspend all radio bearers and signalling radio bearers (except the signalling radio bearer used to receive the SECURITY MODE COMMAND message on the downlink DCCH in RLC-AM) using RLC-AM or RLC-UM that belong to the CN domain indicated in the IE "CN domain identity", with RLC sequence number greater than or equal to the number in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info";
- set the IE "RRC transaction identifier" in the SECURITY MODE COMPLETE message to the value of "RRC transaction identifier" in the entry for the SECURITY MODE CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
  - include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable, for the respective radio bearer and signalling radio bearer;
- when the radio bearers and signalling radio bearers have been suspended:
  - send a SECURITY MODE COMPLETE message on the uplink DCCH in AM RLC, using the old ciphering ~~and the new integrity protection~~ configuration~~s~~;
  - if the IE “Integrity protection mode info” was present in the SECURITY MODE COMMAND message, start applying the new integrity protection configuration in the uplink for RB#2 from and including the transmitted SECURITY MODE COMPLETE message;
- when the successful delivery of the SECURITY MODE COMPLETE message has been confirmed by RLC:
  - resume data transmission on any suspended radio bearer and signalling radio bearer mapped on RLC-AM or RLC-UM;
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends. If a RLC reset or re-establishment occurs after the SECURITY MODE COMPLETE message has been confirmed by RLC, but before the activation time for the new ciphering configuration has been reached, then the activation time shall be ignored and the new ciphering configuration shall be applied immediately after the RLC reset or RLC re-establishment.
  - notify upper layers upon change of the security configuration.

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

- if a new integrity protection key has been received:
  - in the downlink:
    - use the new key;

- set the HFN component of the downlink COUNT-I to zero at the RRC sequence number indicated in IE "Downlink integrity protection activation info" included in the IE "Integrity protection mode info";

in the uplink:

use the new key;

- set the HFN component of the uplink COUNT-I to zero at the RRC sequence number indicated in IE "Uplink integrity protection activation info" included in the IE "Integrity protection mode info";

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

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

8.1.12.4 ~~Cipher activation time too short~~Void

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

8.1.12.5 Reception of SECURITY MODE COMPLETE message by the UTRAN

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

- for radio bearers using RLC-AM or RLC-UM:
  - use the old ciphering configuration for received RLC PDUs with RLC sequence number less than the RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent by the UE;
  - use the new ciphering configuration for received RLC PDUs with RLC sequence number greater than or equal to the RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent by the UE;
  - if an RLC reset or re-establishment occurs after the SECURITY MODE COMPLETE message has been received by UTRAN before the activation time for the new ciphering configuration has been reached, ignore the activation time and apply the new ciphering configuration immediately after the RLC reset or RLC re-establishment;
- for radio bearers using RLC-TM:
  - use the new ciphering configuration for the received RLC PDUs at the CFN as indicated in the IE "Ciphering activation time for DPCH" in the IE "Ciphering mode info";
- and the procedure ends.

8.1.12.6 Invalid SECURITY MODE COMMAND message

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

- transmit a SECURITY MODE FAILURE message on the uplink DCCH using AM RLC;
- set the IE "RRC transaction identifier" in the SECURITY MODE FAILURE message to the value of "RRC transaction identifier" in the entry for the SECURITY MODE CONTROL message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- when the successful delivery of the SECURITY MODE FAILURE message has been confirmed by RLC:
  - resume normal operation as if the invalid SECURITY MODE COMMAND message has not been received and the procedure ends.

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

If the UE receives:

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

it shall perform actions specified below:

- store the received message in the variable ORDERED_CONFIG;
- may first release the current physical channel configuration and
- then establish a new physical channel configuration and act upon all received information elements as specified in subclause 8.6, unless specified in the following:
  - 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 subclause 8.6 and:
    - infer that the PDSCH will be transmitted from the cell from which the downlink DPCH is transmitted.
- The UE shall enter a state according to subclause 8.6.3.3.

If the UE remains in CELL_DCH state after state transition, the UE shall:

- if the IE "UL DPCH Info" is absent, not change its current UL Physical channel configuration;
- if the IE "DL DPCH Info for each RL" is absent, not change its current DL Physical channel configuration.

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

- start timer T305 if timer T305 is not running;
- select PRACH according to subclause 8.6.6.2;
- select Secondary CCPCH according to subclause 8.6.6.5.
- use the transport format set given in system information;
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
- ignore that IE and stop using DRX.
- if the contents of the variable C_RNTI is empty:
  - perform a cell update procedure according to subclause 8.3.1 and then proceed as below.
- transmit a response message as specified in subclause 8.2.2.4a, setting the information elements as specified below:
  - 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.
  - if the variable START_VALUE_TO_TRANSMIT is set, the UE shall:

  - include and set the IE "START" to the value of that variable.
- set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS, and;
- clear that entry.
- if the variable PDCP_SN_INFO is not empty:
  - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;
- in TDD, if the procedure is used to perform a handover to a cell where timing advance is enabled, and the UE can calculate the timing advance value in the new cell (i.e. in a synchronous TDD network):
  - set the IE "Uplink Timing Advance" to the calculated value.
- if the IE “Integrity protection mode info” was present in the received reconfiguration message, start applying the new integrity protection configuration in the uplink for RB#2 from and including the transmitted response message;

If after state transition the UE enters CELL_PCH or URA_PCH state, the UE shall:

- remove any C-RNTI from MAC;
- clear the variable C_RNTI;
- start timer T305 if timer T305 is not running;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in subclause 8.6.3.2.

The procedure ends.

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

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

- If the UE is not in CELL_DCH prior to this procedure and will be in CELL_DCH state at the conclusion of this procedure,
  - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC;

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

- If the UE will be in CELL_DCH state at the conclusion of this procedure,
  - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC;

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

- If the UE will be in CELL_DCH state at the conclusion of this procedure,

- include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;

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

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

- If the UE will be in CELL_DCH state at the conclusion of this procedure,
  - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC;

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

- If the UE will be in CELL_DCH state at the conclusion of this procedure,
  - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC;

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

- if the variable PDCP_SN_INFO is empty:
  - if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
    - when RLC has confirmed the successful transmission of the response message:
      - perform the actions below.
      - notify upper layers upon change of the security configuration.
  - if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is not set:
    - when RLC has been requested to transmit the response message:
      - perform the actions below.
- if the variable PDCP_SN_INFO is non-empty:
  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP_SN_INFO:
      - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";
      - perform the actions below.

If the new state is CELL_PCH or URA_PCH, the response message shall be transmitted using the old configuration before the state transition and the UE shall:

- when RLC has confirmed the successful transmission of the response message:
  - for each radio bearer in the variable PDCP_SN_INFO:
    - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
      - configure the RLC entity for that radio bearer to "continue";

- enter the new state (CELL_PCH or URA_PCH, respectively);
- perform the actions below.

The UE shall:

- clear the variable ORDERED_CONFIG;
- clear the variable PDCP_SN_INFO;
- clear the variable START_VALUE_TO_TRANSMIT;
- clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.

8.3.1.6 Reception of the CELL UPDATE CONFIRM/URA UPDATE CONFIRM message by the UE

When the UE receives a CELL UPDATE CONFIRM/URA UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U_RNTI, or;
- if the message is received on DCCH;

the UE shall:

- stop timer T302;
- act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following:
  - use the transport channel(s) applicable for the physical channel types that is used; and
  - if the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s):
    - use the TFS given in system information.
  - if none of the TFS stored is compatible with the physical channel:
    - delete the stored TFS;
    - use the TFS given in system information.
  - if the CELL UPDATE CONFIRM message includes the IE "RLC reset indicator (for C-plane)":
    - reset the RLC entities for RB 2, RB 3 and, if present, RB 4.
  - if the CELL UPDATE CONFIRM message includes the IE "RLC reset indicator (for U-plane)":
    - reset the AM RLC entities for RB 5 and upwards.
- enter a state according to subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

If the UE after state transition remains CELL_FACH state, it shall

- start the timer T305 if timer T305 is not running and periodical cell update has been requested in system information block type 1;
- select PRACH according to subclause 8.6.6.2;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - ignore that IE and stop using DRX;

If the UE after state transition enters URA_PCH or CELL_PCH state, it shall

- clear the variable C_RNTI;
- stop using that C_RNTI just cleared fro the variable C_RNTI in MAC;
- start the timer T305 if timer T305 is not running and periodical URA update or cell update has been requested in system information block type 1;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

    - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging Occasion and PICH Monitoring Occasion as specified in 8.6.3.2 in CELL_PCH state.

If the UE after the state transition remains in CELL_FACH state and;

- the contents of the variable C_RNTI are empty;

it shall check the value of V302 and

- If V302 is equal to or smaller than N302:
    - set the content of the CELL UPDATE / URA UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE / URA UPDATE message for transmission on the uplink CCCH;
    - increment counter V302;
    - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- If V302 is greater than N302:
    - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
    - clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
    - release all its radio resources;
    - enter idle mode;
    - 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;
    - the procedure ends.

If the UE after the state transition remains in CELL_FACH state and

- a C-RNTI is stored in the variable C_RNTI;

or

the UE after the state transition moves to another state than the CELL_FACH state;

the UE shall:

- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
    - include and set the IE "Radio bearer uplink ciphering activation time info" in any response message transmitted below to the value of that variable;
- set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry.
- if the variable PDCP_SN_INFO is non-empty:
    - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;
- transmit a response message as specified in subclause 8.3.1.7;
- if the IE “Integrity protection mode info” was present in the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message, start applying the new integrity protection configuration in the uplink for RB#2 from and including the transmitted response message;

- clear the variable PDCP_SN_INFO;
- clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- clear the entry for the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS.

The procedure ends.

8.3.1.7 Transmission of a response message to UTRAN

If the CELL UPDATE CONFIRM message

- includes the IE "RB information to release list";

the UE shall:

- transmit a RADIO BEARER RELEASE COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include the IE "RB information to release list"; and
- includes the IE "RB information to reconfigure list "; or
- includes the IE "RB information to be affected list ";

the UE shall:

- transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- includes "Transport channel information elements";

the UE shall:

- transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- includes "Physical channel information elements";

the UE shall:

- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI";

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI";

the UE shall:

- transmit no response message.

If the URA UPDATE CONFIRM message:

- includes any one or both of the IEs "New C-RNTI" and "New U-RNTI";

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

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

- if the variable PDCP_SN_INFO is empty:
  - if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
    - when RLC has confirmed the successful transmission of the response message:
      - continue with the remainder of the procedure.
  - if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is not set:
    - when RLC has been requested to transmit the response message,
      - continue with the remainder of the procedure.
- if the variable PDCP_SN_INFO non-empty:
  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP_SN_INFO:
      - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";
    - continue with the remainder of the procedure.

If the new state is CELL_PCH or URA_PCH, the response message shall be transmitted in CELL_FACH state, and the UE shall:

- when RLC has confirmed the successful transmission of the response message:
  - for each radio bearer in the variable PDCP_SN_INFO:
    - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
      - configure the RLC entity for that radio bearer to "continue";

  - enter the new state (CELL_PCH or URA_PCH, respectively);
- continue with the remainder of the procedure.

8.3.3.3 Reception of UTRAN MOBILITY INFORMATION message by the UE

When the UE receives a UTRAN MOBILITY INFORMATION message, it shall:

- act on received information elements as specified in subclause 8.6;
- set the IE "RRC transaction identifier" in the UTRAN MOBILITY INFORMATION CONFIRM message to the value of "RRC transaction identifier" in the entry for the UTRAN MOBILITY INFORMATION message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
  - include and set the IE "Radio bearer uplink ciphering activation time info" in the UTRAN MOBILITY INFORMATION CONFIRM message to the value of that variable;
- if the variable PDCP_SN_INFO is non-empty:
  - include the IE "RB with PDCP information list" in the UTRAN MOBILITY INFORMATION CONFIRM message and set it to the value of the variable PDCP_SN_INFO;
- transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC;
- if the IE “Integrity protection mode info” was present in the UTRAN MOBILITY INFORMATION message, start applying the new integrity protection configuration in the uplink for RB#2 from and including the transmitted UTRAN MOBILITY INFORMATION CONFIRM message;
- if the variable PDCP_SN_INFO is empty; and
  - if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
    - when RLC has confirmed the successful transmission of the UTRAN MOBILITY INFORMATION CONFIRM message, perform the actions below.
  - if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is not set:
    - when RLC has been requested to transmit the UTRAN MOBILITY INFORMATION CONFIRM message, perform the actions below.
  - if the variable PDCP_SN_INFO is non-empty:
    - when RLC has confirmed the successful transmission of the UTRAN MOBILITY INFORMATION CONFIRM message:
      - for each radio bearer in the variable PDCP_SN_INFO:
        - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";

The procedure ends when of the UTRAN MOBILITY INFORMATION CONFIRM message has been submitted to lower layers for transmission.

8.3.4.3 Reception of an ACTIVE SET UPDATE message by the UE

- Upon reception of an ACTIVE SET UPDATE message the UE shall store the received IE "Radio Link Addition Information" and the IE "Radio Link Removal Information" to the variable ORDERED_ASU.

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

- first add the RLs indicated in the IE "Radio Link Addition Information";
- remove the RLs indicated in the IE "Radio Link Removal Information". If the UE active set is full or becomes full, an RL, which is included in the IE "Radio Link Removal Information" for removal, shall be removed before adding RL, which is included in the IE "Radio Link Addition Information" for addition;
- if the ACTIVE SET UPDATE message includes the IE "U-RNTI":
  - update its identity;
- if the ACTIVE SET UPDATE message includes the IE "CN domain identity" and the IE "NAS system information":
  - forward the content of the IE to the non-access stratum entity of the UE indicated by the IE "CN domain identity";
- if the ACTIVE SET UPDATE message includes the IE 'TFCI combining indicator' associated with a radio link to be added:
  - configure Layer 1 to soft combine TFCI (field 2) of this new link with those links already in the TFCI (field 2) combining set;
- transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC without waiting for the Physical Layer synchronization;
- if the IE "Integrity protection mode info" was present in the ACTIVE SET UPDATE message, start applying the new integrity protection configuration in the uplink for RB#2 from and including the transmitted ACTIVE SET UPDATE COMPLETE message;
- set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE COMPLETE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
  - include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable;
- when the ACTIVE SET UPDATE COMPLETE message has been submitted to lower layers for transmission:
  - clear the contents of the variable ORDERED_ASU;
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends on the UE side.

8.5.8 Hyper Frame Numbers

The hyper frame numbers (HFN) are used as MSBs of both the ciphering sequence number (COUNT-C) and the integrity sequence number (COUNT-I) for the ciphering and integrity protection algorithms, respectively. For non-transparent mode RLC radio bearers there is an uplink and downlink COUNT-C per radio bearer and an uplink and downlink COUNT-I per signalling radio bearer. For all transparent mode RLC radio bearers of the same CN domain, COUNT-C is the same, and COUNT-C is also the same for uplink and downlink.~~. For all transparent mode radio bearers there is an uplink and a downlink COUNT-C and an uplink and a downlink COUNT-I~~. For transparent mode RLC radio bearers there is an uplink and a downlink COUNT-I per signalling radio bearer. (Note: In this release of the specification there is only an uplink transparent mode COUNT-I, which is used for RB 0). COUNT-C and COUNT-I are defined in ~~3GPP TS 33.102~~[24]~~.~~, with the following supplement for COUNT-C: for transparent mode RLC radio bearers with a transmission time interval of x radio frames (x = 2, 4, 8), the MAC PDU is carried by L1 in x consecutive radio frames due to radio frame segmentation. In this case, the CFN of the first segment of the MAC PDU is used as the CFN component of COUNT-C.

The following hyper frame numbers are defined:

MAC-d HFN	24 bits	MSB of COUNT-C for data sent over RLC TM
RLC UM HFN	25 bits	MSB of COUNT-C for data sent over RLC UM
RLC AM HFN	20 bits	MSB of COUNT-C for data sent over RLC AM
RRC HFN	28 bits	MSB of COUNT-I

The START value is used to initialise the 20 most significant bits of all the hyper frame numbers and the remaining bits of the hyper frame numbers are set equal to zero.

8.5.9 START

In connected mode, the START value for CN domain 'X' is calculated as:

$START_X' = MSB_{20}$ (MAX {COUNT-C, COUNT-I | ~~all logical channels protected~~radio bearers and signalling radio bearers with CK_X and IK_X}) + 1.

- if the current $START_X < START_X'$ then $START_X = START_X'$, otherwise $START_X$ is unchanged.

The $START_X$ value is used to initialise the 20 most significant bits of all hyper frame numbers in CN domain 'X'.

When entering idle mode the current START value for every CN domain shall be ~~is~~ stored in the USIM.

8.5.10 Integrity protection

Integrity protection shall be performed on all RRC messages, with the following exceptions:

HANDOVER TO UTRAN COMPLETE

PAGING TYPE 1

PUSCH CAPACITY REQUEST

PHYSICAL SHARED CHANNEL ALLOCATION

RRC CONNECTION REQUEST

RRC CONNECTION SETUP

RRC CONNECTION SETUP COMPLETE

RRC CONNECTION REJECT

RRC CONNECTION RELEASE (CCCH only)

SYSTEM INFORMATION

SYSTEM INFORMATION CHANGE INDICATION

TRANSPORT FORMAT COMBINATION CONTROL

~~NOTE: MEASUREMENT REPORT needs to be studied when used on UM as in some cases there could be synchronization problems with the RRC SN.~~

For each signalling radio bearer, the UE shall use two RRC hyper frame numbers,

- "Uplink RRC HFN";
- "Downlink RRC HFN".

and two message sequence numbers,

- "Uplink RRC Message sequence number";
- "Downlink RRC Message sequence number".

The above information is stored in the variable INTEGRITY_PROTECTION_INFO per signalling radio bearer (RB 0-4).

Upon the first activation of integrity protection for an RRC connection, UE and UTRAN initialise the "Uplink RRC Message sequence number" and "Downlink RRC Message sequence number" for all signalling radio bearers ~~to zero~~as specified in subclauses 8.6.3.5 and 8.5.10.1.

~~The UE and UTRAN apply the sequence numbers for the RRC message activating integrity protection thereafter for all subsequent messages when integrity protection is activated.~~

The RRC message sequence number (RRC SN) is incremented for every integrity protected RRC message. If the same RRC message is sent repeatedly (e.g. RRC CONNECTION RELEASE, RRC CONNECTION RELEASE COMPLETE and UE CAPABILITY INFORMATION) the corresponding RRC SN is not incremented.

8.5.10.1 Integrity protection in downlink

If the UE receives an RRC message on signalling radio bearer with RB identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is present the UE shall:

- perform the actions in 8.6.3.5 and apply the new integrity protection configuration.
- check the value of the IE "RRC message sequence number" included in the IE "Integrity check info".

- if the “Downlink RRC Message sequence number” is not present in the variable INTEGRITY_PROTECTION_INFO:
  - initialise the “Downlink RRC Message sequence number” in the variable INTEGRITY_CHECK_INFO with the value of the IE "RRC message sequence number" included in the IE "Integrity check info" of the received message;
- if the “Downlink RRC Message sequence number” is present in the variable INTEGRITY_PROTECTION_INFO:
  - If the RRC message sequence number is lower than the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO, the UE shall increment "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with one. [Note to Hans: Indentation changed to B3]
  - If the RRC message sequence number is equal to the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO, the message shall be discarded. . [Note to Hans: Indentation changed to B3]

- calculate an expected message authentication code in accordance with subclause 8.5.10.3.
- compare the expected message authentication code with the value of the received IE "message authentication code" contained in the IE 'Integrity check info'.
  - If the expected message authentication code and the received message authentication code are the same, the integrity check is successful.
    - update the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO with the value of the IE "RRC message sequence number" included in the IE "Integrity check info" of the received RRC message.
  - If the calculated expected message authentication code and the received message authentication code differ:
    - if the IE "RRC message sequence number" included in the IE "Integrity check info" is lower than the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO (in this case the "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO was incremented by one, as stated above):
      - decrement "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO by one.
  - discard the message.

If the UE receives an RRC message on signalling radio bearer with identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is not present the UE shall discard the message.

8.5.10.2 Integrity protection in uplink

Upon transmitting an RRC message using the signalling radio bearer with radio bearer identity n, and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" the UE shall:

- increment "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO with 1. When "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO becomes 0, the UE shall increment "Uplink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with 1
- calculate the message authentication code in accordance with subclause 8.5.11.3
- replace the "Message authentication code" in the IE "Integrity check info" in the message with the calculated message authentication code.
- replace the "RRC Message sequence number" in the IE "Integrity check info" in the message with contents set to the new value of the "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO

During an ongoing reconfiguration of the integrity protection, UTRAN should, for all signalling radio bearers, apply the old configuration (that is, the configuration that was applied before the reconfiguration) for the integrity protection. In the response message for the procedure ordering the reconfiguration, the UE indicates the activation time, for each signalling radio bearer except RB2, when the new configuration is to be applied in uplink. UTRAN should then start to apply the new configuration according to the activation time for each signalling radio bearer (for RB2 the new configuration is applied starting from reception of the response message).

8.5.10.3 Calculation of message authentication code

The UE shall calculate the message authentication code in accordance with ~~3GPP TS 33.102~~[24]. The input parameter MESSAGE ~~(3GPP TS 33.102)~~[24] for the integrity algorithm shall be constructed by:

- setting the "Message authentication code" in the IE "Integrity check info" in the message to the signalling radio bearer identity
- setting the "RRC Message sequence number" in the IE "Integrity check info" in the message to zero
- encoding the message
- appending RRC padding (if any) as a bitstring to the encoded bitstring as the least significant bits

8.6.3.4 Ciphering mode info

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

- if IE "Ciphering mode command" has the value "start/restart", the UE shall:
  - start or restart ciphering, using the ciphering algorithm (UEA [~~3GPP TS 33.102~~24]) indicated by the IE "Ciphering algorithm" as part of the new ciphering configuration. The new ciphering configuration shall be applied as specified below.
  - set the variable CIPHERING_STATUS to "Started".
- if the IE "Ciphering mode command" has the value "stop", the UE shall
  - stop ciphering. The new ciphering configuration shall be applied as specified below
  - set the variable CIPHERING_STATUS to "Not started".
- in case the IE "Ciphering mode command" has the value "start/restart" or "stop", the new ciphering configuration shall be applied as follows:
  - if the IE "Ciphering activation time for DPCH" is present in the IE "Ciphering mode info", the UE shall apply the new configuration at that time for radio bearers using RLC-TM. If the IE "Ciphering mode info" is present in a message reconfiguring RB, transport channel or physical channel, the indicated time in IE "Activation time for DPCH" corresponds to a CFN after that reconfiguration.
  - if the IE "Radio bearer downlink ciphering activation time info" is present in the IE "Ciphering mode info", the UE shall apply the following procedure for each radio bearer using RLC-AM and RLC-UM indicated by the IE "RB identity":
    - suspend data transmission on the radio bearer
    - store the "RLC send sequence number" for that radio bearer in the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, at which time the new ciphering configuration shall be applied.
    - when the data transmission of that radio bearer is resumed, the UE shall switch to the new ciphering configuration according to the following:
      - use the old ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number smaller than the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN.
      - use the new ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number greater than or equal to the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN
      - for a radio bearer using RLC-AM, when the RLC sequence number indicated in the IE "Radio bearer downlink ciphering activation time info" is not included in the RLC transmission window, the UE may release the old ciphering configuration for that radio bearer.
      - if an RLC reset or re-establishment occurs before the activation time for the new ciphering configuration has been reached, ignore the activation time and apply the new ciphering configuration immediately after the RLC reset or RLC re-establishment.

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

8.6.3.5 Integrity protection mode info

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

- if IE "Integrity protection mode command" has the value "start" and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Not started", the UE shall:
  - if the "Historical status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Never been active":
    - initialise the information for all signalling radio bearers in the variable INTEGRITY_PROTECTION_INFO according to the following:
      - set the IE "Uplink RRC Message sequence number" to zero;
      - do not include the IE "Downlink RRC Message sequence number";
    - ~~initialise the "Uplink RRC Message sequence number" and "Downlink RRC Message sequence number" for all signalling radio bearers to zero;~~
    - set the "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to the value "Has been active";
  - set the "Status" in the variable INTEGRITY_ PROTECTION_INFO to the value "Started";
  - perform integrity protection on the received message as described in subclause 8.5.10.1;
  - use the algorithm (UIA [~~3GPP TS 33.102~~24]) indicated by the IE "Integrity protection algorithm" contained in the IE "Integrity protection mode info";
  - use the IE "Integrity protection initialisation number", contained in the IE "Integrity protection mode info" as the value of FRESH [~~3GPP TS 33.102~~24].
- if IE "Integrity protection mode command" has the value "modified" and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started", the UE shall:
  - ~~use~~ start applying the new integrity protection configuration in the downlink at the RRC sequence number, for each radio bearer n, indicated by the entry for radio bearer n in the "RRC message sequence number list" in the IE "Downlink integrity protection activation info", included in the IE "Integrity protection mode info";
  - perform integrity protection on the received message as described in subclause 8.5.10.1;
  - if present, use the algorithm indicated by the IE "Integrity protection algorithm" (UIA [~~TS 33.102~~24]);
  - set the content of the variable INTEGRITY_PROTECTION_ACTIVATION_INFO according to the following:
    - For each established signalling radio bearer, stored in the variable ESTABLISHED_RABS, include a value of the RRC sequence number, when the new integrity protection in uplink is to be applied;
    - For RB#0, the value of the included RRC sequence number shall be set to greater than or equal to the current value of the RRC sequence number for RB#0 in the variable INTEGRITY_PROTECTION_INFO, plus the value of the constant N302 plus one;
  - start applying the new integrity protection configuration in the uplink at the RRC sequence number, for each radio bearer n, except for RB#2, indicated by the entry for radio bearer n in the "RRC message sequence number list" in the IE "Uplink integrity protection activation info", included in the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;~~- set the values of the IE "Uplink integrity protection activation info";~~
  - start applying the new integrity protection configuration in the uplink at the RRC sequence number for RB#2, as specified for the procedure initiating the integrity protection reconfiguration;

If the IE "Integrity protection mode info" is not present, the UE shall not change the integrity protection configuration.

10.2.4 ASSISTANCE DATA DELIVERY

This message is sent by UTRAN to convey UP assistance data to the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Assistance data Information elements				
UP OTDOA assistance data	OP		UP OTDOA assistance data 10.3.7.103	
UP GPS assistance data	OP		UP GPS assistance data 10.3.7.90	

10.2.7 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/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
U-RNTI	MP		U-RNTI 10.3.3.47	
RRC transaction identifier	CV-*Failure*		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
START list	MP	1 to <maxCNdomains>		START [~~TS 33.102~~24] values for all CN domains.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	START value to be used in this CN domain.
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	
Failure cause	OP		Failure cause and error information 10.3.3.14	
RB timer indicator	MP		RB timer indicator 10.3.3.28	
Measurement information elements				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

Condition	Explanation
Failure	This IE is mandatory if the IE "Failure cause" is present. Otherwise it is absent.

10.2.13 HANDOVER TO UTRAN COMPLETE

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
START list	CH	1 to <maxCNdomains>		START [~~3GPP TS 33.102~~24] values for all CN domains. The IE is mandatory if it has not been transferred prior to the handover.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	

10.2.41 RRC CONNECTION SETUP COMPLETE

This message confirms the establishment of the RRC Connection by the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
START list	MP	1 to <maxCNdomains>		START [~~TS 33.102~~24] values for all CN domains.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	START value to be used in this CN domain.
UE radio access capability	OP		UE radio access capability 10.3.3.42	
Other information elements				
UE system specific capability	OP	1 to <maxSystemCapability>		
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

10.2.47 SIGNALLING CONNECTION RELEASE REQUEST

This message is used by the UE to request for the release of an existing signalling connection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Message Type	MP		Message type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
CN information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	

10.3.3.16 Integrity check info

The Integrity check info contains the RRC message sequence number needed in the calculation of XMAC-I [~~TS 33.102~~24] and the calculated MAC-I.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message authentication code	MP		bit string(32)	MAC-I [~~TS 33.102~~24] The 27 MSB of the IE shall be set to zero and the 5 LSB of the IE shall be set to the used signalling radio bearer identity when the encoded RRC message is used as the MESSAGE parameter in the integrity protection algorithm.
RRC Message sequence number	MP		Integer (0..15)	The local RRC hyper frame number (RRC HFN) is concatenated with the RRC message sequence number to form the input parameter COUNT-I for the integrity protection algorithm. The IE value shall be set to zero when the encoded RRC message is used as the MESSAGE parameter in the integrity protection algorithm.

10.3.3.17 Integrity protection activation info

This IE contains the time, in terms of RRC sequence numbers, when a new integrity protection configuration shall be activated for the signalling radio bearers.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RRC message sequence number list	MP	4 to 5		The RRC sequence number when a new integrity protection configuration shall be applied, for CCCH (=RB0) and signalling radio bearers in the order RB0, RB1, RB2, RB3, RB4. The value for RB2 shall be ignored.
>RRC message sequence number	MP		Integer (0..15)	

10.3.3.19 Integrity protection mode info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Integrity protection mode command	MP		Enumerated(start, modify)	
Downlink integrity protection activation info	CV-*modify*		Integrity protection activation info 10.3.3.17	
Integrity protection algorithm	OP		Integrity protection algorithm 10.3.3.18	
Integrity protection initialisation number	CV-*start*		Bitstring(32)	FRESH [~~TS 33.102~~24]

Condition	Explanation
Start	The IE is mandatory if the IE "Integrity protection mode command" has the value "start ", otherwise it is not needed in the message.
Modify	The IE is only present if the IE "Integrity protection mode command" has the value "modify"

10.3.3.38 START

There is a START value per CN domain. The START is used to initialise the 20 MSBs of all the hyper frame numbers (MAC-d HFN, RLC UM HFN, RLC AM HFN, RRC HFN) for a CN domain.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
START	MP		Bit string (20)	[~~TS 33.102~~24]

13.4.10 INTEGRITY_PROTECTION_INFO

This variable contains information about the current status of the integrity protection in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Historical status	MP		Enumerated(Never been active, Has been active)	
Status	MP		Enumerated(Not started, Started)	
Signalling radio bearer specific integrity protection information	MP	1 to <maxSRBsetup>		Status information for RB#0-4 in that order
> Uplink RRC HFN	MP		Bitstring (28)	
> Downlink RRC HFN	MP		Bitstring (28)	
> Uplink RRC Message sequence number	MP		Integer (0..15)	
> Downlink RRC Message sequence number	~~MP~~OP		Integer (0..15)	

13.4.10a INTEGRITY_PROTECTION_ACTIVATION_INFO

This variable contains information to be sent to UTRAN about when a new integrity protection configuration shall be activated in the uplink for signalling radio bearers in case of modification of integrity protection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink ~~I~~integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	

14.13.2.2 UE security information

Upon receiving a UE information request from another system, the UE shall indicate the requested security information. The UE security information includes the following RRC information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE information elements				
START list	MP	1 to <MaxCNdomains>		START [~~TS 33.102~~24] values for all CN domains
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	START values to be used in this CN domain.

CR-Form-v3

CHANGE REQUEST

⌘	**25.331**	**CR**	**670**	⌘ rev	**-**	⌘ Current version:	**3.5.0**	⌘

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

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

Title: ⌘	Clarifications on Blind Handover support		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘		***Date:*** ⌘	19 – 02 - 2001
Category: ⌘	**F**	***Release:*** ⌘	R99
	Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	The support of Blind Handover is not clearly specified for the following procedures: • Radio Bearer Control (existed in RRC v3.4.1 but not in v3.5.0) • Inter-RAT handover from UTRAN • Inter-RAT cell change order from UTRAN
Summary of change: ⌘	Addition of a sentence for the "blind handover".
Consequences if not approved: ⌘	Ambiguous specification which could lead to different interpretation for UE manufacturers

Clauses affected: ⌘	8.2.2.3, 8.3.7.3, 8.3.11.3	
Other specs affected: ⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications	
Other comments: ⌘	The same sentence as in other cases is used.	

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

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

The UE shall be able to receive any of the following messages:

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

and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

If the UE receives:

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

it shall perform actions specified below:

- store the received message in the variable ORDERED_CONFIG;
- may first release the current physical channel configuration and
- then establish a new physical channel configuration and act upon all received information elements as specified in subclause 8.6, unless specified in the following:
  - 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 subclause 8.6 and:
    - infer that the PDSCH will be transmitted from the cell from which the downlink DPCH is transmitted.
- The UE shall enter a state according to subclause 8.6.3.3.

If the UE remains in CELL_DCH state after state transition, the UE shall:

- if the IE "UL DPCH Info" is absent, not change its current UL Physical channel configuration;
- if the IE "DL DPCH Info for each RL" is absent, not change its current DL Physical channel configuration.

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

- start timer T305 if timer T305 is not running;
- select PRACH according to subclause 8.6.6.2;
- select Secondary CCPCH according to subclause 8.6.6.5.
- use the transport format set given in system information;
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

    - ignore that IE and stop using DRX.
- if the contents of the variable C_RNTI is empty:
    - perform a cell update procedure according to subclause 8.3.1 and then proceed as below.
- transmit a response message as specified in subclause 8.2.2.4a, setting the information elements as specified below:
    - 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.
    - if the variable START_VALUE_TO_TRANSMIT is set, the UE shall:
        - include and set the IE "START" to the value of that variable.
    - set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS, and;
    - clear that entry.
    - if the variable PDCP_SN_INFO is not empty:
        - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;
    - in TDD, if the procedure is used to perform a handover to a cell where timing advance is enabled, and the UE can calculate the timing advance value in the new cell (i.e. in a synchronous TDD network):
        - set the IE "Uplink Timing Advance" to the calculated value.

If after state transition the UE enters CELL_PCH or URA_PCH state, the UE shall:

- remove any C-RNTI from MAC;
- clear the variable C_RNTI;
- start timer T305 if timer T305 is not running;
- select Secondary CCPCH according to subclause 8.6.6.5.
- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
    - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in subclause 8.6.3.2.

The procedure ends.

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

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

The UE shall take the following actions:

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

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

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

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

8.3.11.3 Reception of an CELL CHANGE ORDER FROM UTRAN message by the UE

The UE shall be able to receive a CELL CHANGE ORDER FROM UTRAN message and perform a cell change order to another RAT, even if no prior UE measurements have been performed on the target cell.

The UE shall take the following actions:

- establish the connection to the other radio access technology, as specified within IE "Target cell info". This IE specifies the target cell identity, in accordance with the specifications for that other RAT. In case the target cell is a GSM/ GPRS cell, IE "Target cell info" may also include IE "NC mode", which specifies the cell selection mode to be applied in the target cell; and
- if IE "NC mode" is not included in the CELL CHANGE ORDER FROM UTRAN:
  - retrieve it from the target cell as specified in 3GPP TS 04.18;
  - act upon IE "NC mode" as specified in 3GPP TS 04.18.
- if IE "RAB info" is not included in the CELL CHANGE ORDER FROM UTRAN message:
  - initiate cell change for all RABs used by the UE.
- if one or more IEs "RAB info" are included in the CELL CHANGE ORDER FROM UTRAN message:
  - initiate handover for the RABs specified within this IE(s). Other RABs used by the UE, if any, shall not be affected.
- switch the current connection to the other radio access technology.

NOTE 2: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

CR-Form-v3

CHANGE REQUEST

⌘ **25.331**	**CR**	**671**	⌘ rev	**r1**	⌘ Current version:	**3.5.0** ⌘

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

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

Title:	⌘	Missing descriptions of UE behaviour at reception of IEs
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	
Date:	⌘	19 – 02 - 2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

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

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

Reason for change:	⌘	Currently a few IEs that are part of downlink messages are missing from chapter 8 (RRC procedures) of TS 25.331. This means that the UE behaviour at reception of these IEs is left unspecified and there is a risk that not all UEs on the market will behave as intended. The specification needs to be clear on how the UE should act upon a received IE, and consequently some improvement of the RRC procedure text is needed.
Summary of change:	⌘	
Consequences if not approved:	⌘	

Clauses affected:	⌘	6.3, 8.5.15.1, 8.5.15.2, 8.5.x1 (new), 8.5.x2 (new), 8.5.x3 (new), 8.5.x4 (new), 8.6.1.1, 8.6.3.1, 8.6.3.1a (new), 8.6.3.2, 8.6.3.3, 8.6.3.4, 8.6.3.5, 8.6.3.6, 8.6.3.7, 8.6.3.9, 8.6.3.10, 8.6.3.11, 8.6.4.2a (new), 8.6.5.1, 8.6.5.x1 (new), 8.6.5.x2 (new), 8.6.5.x3 (new), 8.6.5.x4 (new), 8.6.5.x5 (new), 8.6.5.x6 (new), 8.6.5.x7 (new), 8.6.5.x8 (new), 8.6.5.x9 (new), 8.6.5.x10 (new), 8.6.5.x11 (new), 8.6.6.2, 8.6.6.3, 8.6.6.5, 8.6.6.7, 8.6.6.9, 8.6.6.10, 8.6.6.16, 8.6.6.x1 (new), 8.6.6.x2 (new), 8.6.6.x3 (new), 8.6.6.x4 (new), 8.6.6.x5 (new), 8.6.6.x6 (new), 10.3.5.12, 10.3.5.14, 10.3.5.15, 10.3.5.16, 10.3.5.17, 10.3.6.6, 10.3.6.43, 10.3.6.47, 10.3.6.48, 10.3.6.53, 10.3.6.55, 11.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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6.3 Signalling Radio Bearers

The Radio Bearers available for usage by RRC messages using RLC-TM, RLC-UM and RLC-AM on the DCCH and CCCH are specified in the following. The UE and UTRAN shall select the radio bearers for RRC messages using RLC-TM, RLC-UM or RLC-AM on the DCCH and CCCH, according to the following:

- RB 0 shall be used for all messages sent on the CCCH (UL: RLC-TM, DL: RLC-UM).
- RB 1 shall be used for all messages sent on the DCCH, when using RLC unacknowledged mode (RLC-UM).
- RB 2 shall be used for all messages sent on the DCCH, when using RLC acknowledged mode (RLC-AM), except for except for the RRC messages carrying higher layer (NAS) signalling.
- RB 3 and optionally RB 4 shall be used for~~by~~ the RRC messages carrying higher layer (NAS) signalling and sent on the DCCH in RLC acknowledged mode (RLC-AM), as specified in subclause 8.1.8., 8.1.9 and 8.1.10.
- ~~For RRC messages on the DCCH using RLC transparent mode (RLC-TM), the transparent signalling DCCH shall be used~~Additionally, RBs whose identities shall be set between 5 and 31 may be used for the RRC messages on the DCCH sent in RLC transparent mode (RLC-TM).
- RRC messages on the SHCCH are mapped either on RACH or on the USCH with the lowest assigned Transport Channel Id in the uplink and either on FACH or on the DSCH with the lowest assigned Transport Channel Id using RLC-TM.
  These messages are only specified for TDD mode.

When an RRC message is transmitted in DL on CCCH or SHCCH using RLC UM, RRC should indicate to RLC that a special RLC length indicator should be used [16]. The UE shall assume that this indication has been given. The special length indicator indicates that an RLC SDU begins in the beginning of an RLC PDU.

8.5 General procedures

8.5.1 Selection of initial UE identity

The purpose of the IE "Initial UE identity" is to provide a unique UE identification at the establishment of an RRC connection. The type of identity shall be selected by the UE according to the following.

Upper layers shall set the variable SELECTED_PLMN. If the variable SELECTED_PLMN in the UE indicates "GSM-MAP", the UE shall choose "UE id type" in the IE "Initial UE identity" with the following priority:

1. TMSI (GSM-MAP): The TMSI (GSM-MAP) shall be chosen if available. The IE "LAI" in the IE "Initial UE identity" shall also be present when TMSI (GSM-MAP) is used, for making it unique.

2. P-TMSI (GSM-MAP): The P-TMSI (GSM-MAP) shall be chosen if available and no TMSI (GSM-MAP) is available. The IE "RAI" in the IE "Initial UE identity" shall in this case also be present when P-TMSI (GSM-MAP) is used, for making it unique.

3. IMSI (GSM-MAP): The IMSI (GSM-MAP) shall be chosen if available and no TMSI (GSM-MAP) or P-TMSI is available.

4. IMEI: The IMEI shall be chosen when none of the above three conditions are fulfilled.

When being used, the IEs "TMSI (GSM-MAP)," "P-TMSI (GSM-MAP)", "IMSI (GSM-MAP)", "LAI" and "RAI" shall be set equal to the values of the corresponding identities stored in the USIM or SIM.

If the variable SELECTED_PLMN in the UE indicates "ANSI-41", the UE shall choose "UE id type" in the IE "Initial UE identity" according to the procedure specified in the 3GPP2 document "3GPP2 C.P0004-A".

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 3GPP TS 25.304.

While camping on a cell, the UE shall acquire system information according to the system information procedure in subclause 8.1, perform measurements according to the measurement control procedure specified in subclause 8.4 and, if registered, be prepared to receive paging messages according to the paging procedure in subclause 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 subclause 8.6.1.2.

When entering idle mode the current START value for every CN domain is stored in the USIM.

8.5.3 Open loop power control upon establishment of DPCCH

This procedure is used in FDD mode only.

When establishing the first DPCCH the UE shall start the UL inner loop power control at a power level according to:

- DPCCH_Initial_power = DPCCH_Power_offset – CPICH_RSCP

Where

DPCCH_Power_offset shall have the value of IE "DPCCH Power offset" in IE "Uplink DPCH power control info

The value for the CPICH_RSCP shall be measured by the UE.

8.5.4 Physical channel establishment criteria

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 successive "in sync" indications. On receiving N312 successive "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

8.5.5 Actions in "out of service area" and "in service area"

This subclause specifies the general actions the UE shall perform when it detects "out of service" or "in service" area. The specific UE behaviour when it detects "out of service" or "in service area" and periodical cell update or periodical URA update has been configured is specified in subclause 8.3.1.

8.5.5.1 Detection of "out of service" area

When a suitable cell is not found based on the description in subclause 5.2.2.1 of 3GPP TS 25.304, the UE considers it as having detected "out of service area".

8.5.5.1.1 Actions following detection of "out of service" area in URA_PCH or CELL_PCH state

If the UE detects the "out of service area" and the UE is in URA_PCH or CELL_PCH state it shall perform the following actions:

start timer T316;

perform processes described in subclause 7.2.2.

8.5.5.1.2 Actions following detection of "out of service" area in CELL_FACH state

If the UE detects the "out of service area" and the UE is in CELL_FACH state it shall perform the following actions:

- start timer T317 if not already running;
- perform processes described in subclause 7.2.2.

8.5.5.2 Detection of "in service" area

When a suitable cell is found based on the description in 3GPP TS 25.304, the UE considers it as having detected "in service area".

8.5.5.2.1 Actions following Re-entry into "in service area" in URA_PCH or CELL_PCH state

If the UE re-enters "in service area" before T316 expiry the UE shall perform the following actions:

- stop T316;
- perform processes described in subclause 7.2.2.

8.5.5.2.2 Actions following re-entry into "in service area" in CELL_FACH state

If the UE detects "in service area" before T317 expiry the UE shall perform the following actions:

stop T317;

initiate the cell update procedure using as cause "Re-entering service area" as specified in subclause 8.3.1.;

perform processes described in subclause 7.2.2.

8.5.5.3 T316 expiry

On T316 expiry the UE shall perform the following actions:

start timer T317;

initiate the cell update procedure using as cause "Re-entering service area" as specified in subclause 8.3.1.

8.5.5.4 T317 expiry

When the T317 expires, the UE shall:

- move to idle mode;
- release all dedicated resources;
- indicate an RRC connection failure to the non-access stratum,
- perform actions specified in subclause 8.5.2 when entering idle mode from connected mode.

8.5.6 Radio link failure criteria

In CELL_DCH State the UE shall start timer T313 after receiving N313 consecutive "out of sync" indications for the established DPCCH physical channel from layer 1. The UE shall stop and reset timer T313 upon receiving N315 successive "in sync" indications from layer 1 and upon change of UE state. If T313 expires, the UE shall consider it as a "Radio link failure".

8.5.7 Open loop power control

For FDD and prior to PRACH or PCPCH transmission the UE shall:

- read the IEs "Primary CPICH DL TX power", "UL interference" and "Constant value" in System Information Block type 6 (or System Information Block type 5, if system information block type 6 is not being broadcast) and System Information Block type 7.
- measure the value for the CPICH_RSCP
- calculate the power for the first preamble as:

  Preamble_Initial_Power = Primary CPICH DL TX power – CPICH_RSCP + UL interference + Constant Value

    Where,

      Primary CPICH DL TX power shall have the value of IE "Primary CPICH DL TX power",

      UL interference shall have the value of IE "UL interference"; and

      Constant Value shall have the value of IE "Constant Value".

- as long as the physical layer is configured for PRACH or PCPCH transmission, continuously recalculate the Preamble_Initial_Power when any of the broadcast parameters used in the above formula changes and resubmit to the physical layer the new calculated Preamble_Initial_Power.

For TDD the UE shall:

- if in the IE "Uplink DPCH Power Control" the "CHOICE UL OL PC info" has the value "Broadcast UL OL PC info":
  - acquire Reference Power, Constant Values from System Information Block type 5 and System Information Block type 6, and I_{BTS} for all active UL timeslots from System Information Block type 14 on the BCH;

- otherwise:

  - acquire Reference Power, Constant Values and I_{BTS} for all active UL timeslots from the IE "Uplink DPCH Power Control".

- for PUSCH and PRACH power control acquire Reference Power, Constant Values and I_{BTS} for all active UL timeslots from System Information Block type 5 , System Information Block type and System Information Block type 14 on the BCH,

  calculate the UL transmit power according to the following formula for the PRACH continuously while the physical channel is active:

  - $P_{PRACH} = L_{PCCPCH} + I_{BTS}$ + RACH Constant value,

  - 3dB shall be added to RACH Constant Value in the above equation for the case where RACH Spreading Factor = 8

- calculate the UL transmit power according to the following formula for the DPCH continuously while the physical channel is active:

  $P_{DPCH} = \alpha L_{PCCPCH}+(1-\alpha)L_0 + I_{BTS} + SIR_{TARGET}+$ DPCH Constant value

- calculate the UL transmit power according to the following formula for the PUSCH continuously while the physical channel is active:

  $P_{USCH} = \alpha L_{PCCPCH}+(1-\alpha)L_0 + I_{BTS} + SIR_{TARGET}+$ USCH Constant value

Where, for all the above equations for TDD the following apply:

- P_{PRACH}, P_{DPCH}, & P_{USCH}: Transmitter power level in dBm,

- L_{PCCPCH}: Measurement representing path loss in dB (reference transmit power "Primary CCPCH Tx Power" is broadcast on BCH in System Information Block type 5 and System Information Block type 6, or individually signalled to each UE in the IE" Uplink DPCH Power Control").

- L_0: Long term average of path loss in dB

- I_{BTS}: Interference signal power level at cell's receiver in dBm ("UL Interference" is broadcast on BCH in System Information Block type 14 or individually signalled to each UE in the IE "Uplink DPCH Power Control" for each active uplink timeslot).

- α: α is a weighting parameter, which represents the quality of path loss measurements. α may be a function of the time delay between the uplink time slot and the most recent down link PCCPCH time slot. α is calculated at the UE.

- SIR_{TARGET}: Target SNR in dB. This value is individually signalled to UEs in IEs "UL DPCH Power Control Info" and "PUSCH Power Control Info".

- RACH Constant value: This value is broadcast on BCH and shall be read on System Information Block type 5 and System Information Block type 6.

- DPCH Constant value: This value is broadcast on BCH and shall be read on System Information Block type 5 and System Information Block type 6, or individually signalled to each UE in the IE "Uplink DPCH Power Control".

- USCH Constant Value: This value is broadcast on BCH and shall be read on System Information Block type 5 and System Information Block type 6.

8.5.8 Hyper Frame Numbers

The hyper frame numbers (HFN) are used as MSBs of both the ciphering sequence number (COUNT-C) and the integrity sequence number (COUNT-I) for the ciphering and integrity protection algorithms, respectively. For non-transparent mode radio bearers there is an uplink and downlink COUNT-C per radio bearer and an uplink and downlink

COUNT-I per signalling radio bearer. For all transparent mode radio bearers there is an uplink and a downlink COUNT-C and an uplink and a downlink COUNT-I. COUNT-C and COUNT-I are defined in 3GPP TS 33.102.

The following hyper frame numbers are defined:

MAC-d HFN	24 bits	MSB of COUNT-C for data sent over RLC TM
RLC UM HFN	25 bits	MSB of COUNT-C for data sent over RLC UM
RLC AM HFN	20 bits	MSB of COUNT-C for data sent over RLC AM
RRC HFN	28 bits	MSB of COUNT-I

The START value is used to initialise the 20 most significant bits of all the hyper frame numbers and the remaining bits of the hyper frame numbers are set equal to zero.

8.5.9 START

In connected mode, the START value for CN domain 'X' is calculated as

$START_X = MSB_{20}$ (MAX {COUNT-C, COUNT-I | all logical channels protected with CK_X and IK_X}) + 1.

The $START_X$ value is used to initialise the 20 most significant bits of all hyper frame numbers in CN domain 'X'.

When entering idle mode the current START value for every CN domain is stored in the USIM.

8.5.10 Integrity protection

Integrity protection shall be performed on all RRC messages, with the following exceptions:

HANDOVER TO UTRAN COMPLETE

PAGING TYPE 1

PUSCH CAPACITY REQUEST

PHYSICAL SHARED CHANNEL ALLOCATION

RRC CONNECTION REQUEST

RRC CONNECTION SETUP

RRC CONNECTION SETUP COMPLETE

RRC CONNECTION REJECT

RRC CONNECTION RELEASE (CCCH only)

SYSTEM INFORMATION

SYSTEM INFORMATION CHANGE INDICATION

TRANSPORT FORMAT COMBINATION CONTROL

NOTE: MEASUREMENT REPORT needs to be studied when used on UM as in some cases there could be synchronization problems with the RRC SN.

For each signalling radio bearer, the UE shall use two RRC hyper frame numbers,

- "Uplink RRC HFN";
- "Downlink RRC HFN".

and two message sequence numbers,

- "Uplink RRC Message sequence number";

- "Downlink RRC Message sequence number".

The above information is stored in the variable INTEGRITY_PROTECTION_INFO per signalling radio bearer (RB 0-4).

Upon the first activation of integrity protection for an RRC connection, UE and UTRAN initialise the "Uplink RRC Message sequence number" and "Downlink RRC Message sequence number" for all signalling radio bearers to zero. The UE and UTRAN apply the sequence numbers for the RRC message activating integrity protection thereafter for all subsequent messages when integrity protection is activated. The RRC message sequence number (RRC SN) is incremented for every integrity protected RRC message. If the same RRC message is sent repeatedly (e.g. RRC CONNECTION RELEASE, RRC CONNECTION RELEASE COMPLETE) the corresponding RRC SN is not incremented.

8.5.10.1 Integrity protection in downlink

If the UE receives an RRC message on signalling radio bearer with RB identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is present the UE shall:

- check the value of the IE "RRC message sequence number" included in the IE "Integrity check info". If the RRC message sequence number is lower than the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO, the UE shall increment "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with one. If the RRC message sequence number is equal to the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO, the message shall be discarded.
- calculate an expected message authentication code in accordance with subclause 8.5.10.3.
- compare the expected message authentication code with the value of the received IE "message authentication code" contained in the IE 'Integrity check info'.
  - If the expected message authentication code and the received message authentication code are the same, the integrity check is successful.
  - If the calculated expected message authentication code and the received message authentication code differ:
    - if the IE "RRC message sequence number" included in the IE "Integrity check info" is lower than the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO (in this case the "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO was incremented by one, as stated above):
      - decrement "Downlink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO by one.
      - discard the message.

If the UE receives an RRC message on signalling radio bearer with identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is not present the UE shall discard the message.

8.5.10.2 Integrity protection in uplink

Upon transmitting an RRC message using the signalling radio bearer with radio bearer identity n, and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" the UE shall:

- increment "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO with 1. When "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO becomes 0, the UE shall increment "Uplink RRC HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with 1
- calculate the message authentication code in accordance with subclause 8.5.11.3
- replace the "Message authentication code" in the IE "Integrity check info" in the message with the calculated message authentication code.

- replace the "RRC Message sequence number" in the IE "Integrity check info" in the message with contents set to the new value of the "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO

8.5.10.3 Calculation of message authentication code

The UE shall calculate the message authentication code in accordance with 3GPP TS 33.102. The input parameter MESSAGE (3GPP TS 33.102) for the integrity algorithm shall be constructed by:

- setting the "Message authentication code" in the IE "Integrity check info" in the message to the signalling radio bearer identity
- setting the "RRC Message sequence number" in the IE "Integrity check info" in the message to zero
- encoding the message
- appending RRC padding (if any) as a bitstring to the encoded bitstring as the least significant bits

8.5.11 FACH measurement occasion calculation

When in CELL_FACH state the UE shall perform inter-frequency and inter system measurements during the frame(s) with the SFN value fulfilling the following equation:

SFN div N = C_RNTI mod M_REP + n * M_REP

where

- N is the TTI (in number of 10ms frames) of the FACH having the largest TTI on the SCCPCH monitored by UE
- C_RNTI is the C-RNTI value of the UE
- M_REP is the Measurement Occasion cycle length. According to the equation above, a FACH Measurement Occasion of N frames will be repeated every N * M_REP frame, and M_REP = 2^k.

  where,

  - k is the FACH Measurement occasion cycle length coefficient.
    The value of the FACH Measurement occasion cycle length coefficient is read in system information in "System Information Block type 11" or "System Information Block type 12" in the IE "FACH measurement occasion info".
- n = 0,1,2… as long as SFN is below its maximum value

The UE is allowed to measure on other occasions in case the UE moves "out of service" area or in case it can simultaneously perform the ordered measurements.

8.5.12 Establishment of Access Service Classes

The PRACH resources (i.e. access slots and preamble signatures for FDD), timeslot (with specific frame allocation and channelisation code for TDD) may be divided between different Access Service Classes in order to provide different priorities of RACH usage. It is possible for more than one ASC or for all ASCs to be assigned to the same access slot/signature space in FDD or frame allocation in TDD.

Access Service Classes shall be numbered in the range $0 \le i \le$ NumASC ≤ 7 (i.e. the maximum number of ASCs is "NumASC+1" = 8). An ASC is defined by an identifier, i, that defines a certain partition of the PRACH resources and an associated persistence value P_i. A set of ASC parameters consists of "NumASC+1" such parameters (i, P_i), i = 0, …, NumASC.

PRACH partitions shall be established using the information element "PRACH partition". The persistence values P_i to be associated with each ASC shall be derived from the dynamic persistence level N = 1,…, 8 which is broadcast in SIB 7, and the persistence scaling factors s_i, broadcast in System Information Block Type 5 and possibly also in System Information Block Type 6, as follows:

$P(N) = 2^{-(N-1)}$

ASC # *i*	0	1	2	3	4	5	6	7
P_i	1	P(N)	s_2 P(N)	s_3 P(N)	s_4 P(N)	s_5 P(N)	s_6P(N)	s_7 P(N)

Scaling factors s_i are provided optionally for $i = 2,\ldots,$ NumASC, where NumASC+1 is the number of ASCs as defined by PRACH partitioning. If no scaling factors are broadcast, default value 1 shall be used if NumASC ≥ 2.

If $k \geq 1$ scaling factors are broadcast and NumASC ≥ k+2 then the last scaling factor s_{k+1} shall be used as default for the ASCs where $i > k + 1$.

The set of ASC parameters is provided to MAC with the CMAC-Config-REQ primitive (see TS 25.321), the PRACH partitioning is provided to PHY using the CPHY-TrCH-Config-REQ primitive (see TS 25.302).

The ASC enumeration shall be such that it corresponds to the order of priority (ASC 0 = highest priority, ASC 7 = lowest priority). ASC 0 shall be used in case of Emergency Call or for reasons with equivalent priority.

At radio bearer setup/reconfiguration each involved logical channel is assigned a MAC Logical channel Priority (MLP) in the range 1,…,8. When the MAC sublayer is configured for RACH transmission in the UE, these MLP levels shall be employed for ASC selection on MAC.

8.5.13 Mapping of Access Classes to Access Service Classes

Access Classes shall only be applied at initial access, i.e. when sending an RRC CONNECTION REQUEST message. A mapping between Access Class (AC) and Access Service Class (ASC) shall be indicated by the information element "AC-to-ASC mapping" in System Information Block type 5. The correspondence between AC and ASC shall be indicated as follows.

AC	0 - 9	10	11	12	13	14	15
ASC	1st IE	2nd IE	3rd IE	4th IE	5th IE	6th IE	7th IE

In the table, "nth IE" designates an ASC number i in the range 0 - 7 to AC.

For the random access, the parameters implied by the respective ASC shall be employed. In case the UE is member of several ACs it shall select the ASC for the highest AC number. In connected mode, AC shall not be applied.

8.5.14 PLMN Type Selection

The UE shall perform PLMN selection and reselection as stated in 3GPP TS 25.304 and store the identifier of the chosen PLMN in the variable SELECTED_PLMN as follows:

- If a GSM-MAP type of PLMN is selected, the UE shall set the "PLMN Type" in the variable SELECTED_PLMN to "GSM-MAP" and store the PLMN identity of that PLMN.

- If an ANSI-41 type of PLMN is selected, the UE shall set the "PLMN Type" in the variable SELECTED_PLMN to "ANSI-41" and store the System identification (SID) of that PLMN.

8.5.15 CFN calculation

8.5.15.1 Initialisation for~~in~~ CELL_DCH state after state transition~~on transiting from CELL_FACH state~~

When the UE receives any of the messages causing the UE to perform a state transition to CELL_DCH, the UE shall set the CFN in relation to the SFN of the first radio link listed in the IE "Downlink information per radio link list" included in that message according to the following formula:~~When the UE changes from CELL_FACH state to CELL_DCH state CFN shall be calculated according to the following formula~~:

- for FDD:

CFN = ((SFN*38400 - DOFF*512) div 38400) mod 256

- for TDD:

  CFN = (SFN - DOFF) mod 256

8.5.15.2 Initialisation in CELL_DCH state at hard handover

When the UE is in CELL_DCH state and receives any of the messages causing the UE to perform a hard handover, the UE shall check the IE "Timing indication" in that message and:

- if IE "Timing indication" has the value "initialise" (i.e. timing re-initialised hard handover):
  - if IE "CFN-targetSFN frame offset is not included:
    - read SFN on target cell identified by the first radio link listed in the IE "Downlink information per radio link list" included in that message;
    - set ~~and~~ the CFN ~~shall be calculated~~ according to the following formula:
      - for FDD:
        - CFN = ((SFN*38400 - DOFF*512) div 38400) mod 256;
      - for TDD:
        - CFN = (SFN - DOFF) mod 256;
  - if IE "CFN-targetSFN frame offset" is included in the message causing the UE to perform a timing re-initialised hard handover, CFN shall be calculated according to the following formula:
    - for FDD:
      - CFNnew = (CFNold*38400+COFF*38400 -DOFF*512) div 38400) mod 256
    - for TDD:
      - CFNnew = (CFNold+COFF - DOFF) mod 256
        - where COFF is the value of "CFN-targetSFN frame offset".

NOTE: CFN-targetSFN frame offset = (TargetSFN-CFN)mod256

- if IE "Timing indication" has the value "maintain" (i.e. timing-maintained hard handover), the UE shall keep CFN with no change due to the hard handover, and only increase CFN (mod 256) by 1 every frame.

8.5.15.3 Initialisation for CELL_FACH

When the UE performs cell selection, re-selection or changes to CELL_FACH state the UE shall set CFN for all common or shared channels according to:

- CFN = SFN mod 256

After the initialisation, the CFN in the UE is increased (mod 256) by 1 every frame.

8.5.15.4 Initialisation after intersystem handover to UTRAN

Initialisation for CELL_DCH state after intersystem handover:

- read SFN on target cell and the CFN shall be calculated according to the following formula:
- for FDD:

  CFN = ((SFN*38400 - DOFF*512) div 38400) mod 256

- for TDD:

  CFN = (SFN - DOFF) mod 256

8.5.x1 Configuration of CTCH occasions

The CTCH, carrying CBS data is mapped onto only one S-CCPCH. If more than one CTCH is defined, the first CTCH that is configured in the list of S-CCPCHs is the one that is used for CBS data.

The CTCH occasions are identified by the first radio frame of the TTI which can contain CTCH data. The CTCH occasions are fixed on the system frame number cycle 0 .. 4095 (i.e. no modulo calculation) and thus repeated cyclically.

The CTCH occasions are determined by a set of parameters.

M_{TTI}: number of radio frames within the TTI of the FACH used for CTCH

N: period of CTCH allocation on S-CCPCH, integer number of radio frames, $M_{TTI} \leq N \leq MaxSFN - K$, where N is a multiple of M_{TTI} (see 3GPP TS 25.212 and 3GPP TS 25.222).

MaxSFN: maximum system frame number = 4095 (see 3GPP TS 25.402).

K: CBS frame offset, integer number of radio frames $0 \leq K \leq N-1$ where K is a multiple of M_{TTI} .

The CTCH occasions are calculated as follows:

SFN = (K + m N), m = 0, 1,..., M, with M chosen that $K+MN \leq MaxSFN$.

The parameters N and K are broadcast as system information.

8.5.x2 PRACH selection

The UE shall select a PRACH according to the following rule. The UE shall:

- select a default PRACH from the ones indicated in the IE "PRACH info" in System Information Block type 5 (applicable in Idle Mode and Connected Mode) and System Information Block type 6 (applicable in Connected Mode only), as follows:
  - if both RACH with 10 ms and 20 ms TTI are indicated in System Information Block type 5 and System Information Block type 6:
    - select the appropriate TTI based on power requirements, as specified in subclause 8.6.6.3;
  - select a RACH randomly from the ones listed in System Information Block type 5 and System Information Block type 6 as follows:

    "Index of selected PRACH" = floor (rand * K)

    where K is equal to the number of listed PRACHs which carry an RACH with the above selected TTI, "rand" is a random number uniformly distributed in the range 0,...,1, and "floor" refers to rounding down to nearest integer. RACHs with 10 and 20 ms TTI shall be counted separately. These RACHs shall be indexed from 0 to K-1 in the order of their occurrence in SIB 5 and SIB 6, where RACHs listed in SIB 5 shall be counted first. The random number generator is left to implementation. The scheme shall be implemented such that one of the available RACHs is randomly selected with uniform probability. At startup of the random number generator in the UE the seed shall be dependent on the IMSI of the UE or time, thereby avoiding that all UEs select the same RACH;
  - reselect the default PRACH when a new cell is selected. RACH reselection may also be performed after each transmission of a Transport Block Set on RACH;
- for emergency call, the UE is allowed to select any of the available RACHs.

8.5.x3 Selection of RACH TTI

In FDD mode, a RACH may employ either 10 or 20 ms TTI. The supported TTI is indicated as a semi-static parameter of the RACH Transport Format in system information. If in one cell RACHs for both 10 and 20 ms TTI are supported, the UE shall select an appropriate RACH according to the following rule:

The UE shall first check whether a RACH Transport Format is available which is suitable for the transmission of the current transport Block Set for both 10 and 20 ms TTI. The UE shall:

- if the required transport format is available only for one particular TTI:
  - select this TTI;
  - identify the corresponding RACHs;
  - proceed with RACH selection as specified in subclause 8.6.6.2.
- if the required transport format is available on both types of RACH, 10 and 20 ms TTI:
  - perform TTI selection as follows:
    - when the UE calculates the initial preamble transmit power ("Preamble_Initial_Power") as specified in subclause 8.5.7:
      - calculate a transmit power margin,

$$\text{Margin} = \{\min(\text{Maximum allowed UL tx power}, P\_MAX) - \max(\text{Preamble\_Initial\_Power}, \text{Preamble\_Initial\_Power} + \Delta Pp\text{-}m + 10*\log_{10}(1 + (\beta_d / \beta_c)^2))\}$$

where "Maximum allowed UL tx power" is the maximum allowed uplink transmit power indicated in system information (in dBm), and P_MAX is the maximum RF output power of the UE (dBm). The margin shall be calculated for 10 ms TTI RACH message gain factors β_d and β_c.

NOTE: the expression Preamble_Initial_Power + ΔPp-m + 10*log$_{10}$(1 + (β_d /β_c)^2) represents the total RACH message power if the message would be sent after the initial preamble.

- if the value of "Margin" calculated for RACH with 10 ms TTI is less than 6 dB:
  - select RACH with 20 ms TTI, and proceed as specified in subclause 8.6.6.2.
- perform reselection of the RACH TTI only after successful transmission of one Transport Block Set. However in case L1 message transmission on PRACH has failed at least once while using 10 ms TTI, the UE may use the 20 ms TTI RACH for the retransmission. Handling of RACH Message transmission failure is part of general error handling procedure.

8.5.x4 Secondary CCPCH selection

In UTRAN Connected mode, the UE shall select the Secondary CCPCH according to the following rules:

- in Cell_DCH state:
  - select Secondary CCPCH according to subclause 8.6.6.4;
- in Cell_FACH state:
  - select an SCCPCH from the SCCPCHs listed in System Information Block types 5 and 6 (SIB 5 and SIB 6) based on U-RNTI as follows:

    "Index of selected SCCPCH" = U-RNTI mod K,

  where K is equal to the number of listed SCCPCHs which carry a FACH (i.e., SCCPCHs carrying PCH only shall not be counted). These SCCPCHs shall be indexed from 0 to K-1in the order of their occurrence in SIB 5 and SIB 6, and "Index of selected SCCPCH" identifies the selected SCCPCH. SCCPCHs included in SIB 5 shall be indexed first.

in Cell_PCH and URA_PCH states:

- select an SCCPCH from the SCCPCHs listed in SIB 5 and SIB 6 based on U-RNTI as follows:

  "Index of selected SCCPCH" = U-RNTI mod K,

  where K is equal to the number of listed SCCPCHs which carry a PCH (i.e., SCCPCHs carrying FACH only shall not be counted). These SCCPCHs shall be indexed in the order of their occurrence in system information from 0 to K-1, and "Index of selected SCCPCH" identifies the selected SCCPCH.

UE shall set CFN in relation to SFN of current cell according to subclause 8.5.15.

8.6 Generic actions on receipt and absence of an information element

8.6.1 CN information elements

~~8.6.1.1 CN domain specific DRX cycle length coefficient~~

~~The UE updates CN domain specific DRX cycle length coefficient as specified in [4]. The UE shall use it to calculate the CN domain specific DRX cycle length, according to the following:~~

- ~~set k to the value of the IE "CN domain specific DRX cycle length coefficient".~~
- ~~store the result of~~ 2^k ~~*PBP, where PBP is the Paging Block Periodicity, as the CN domain specific DRX cycle length for the CN domain indicated by the IE "CN domain identity". For FDD PBP=1.~~

~~The UE shall determine its idle mode paging occasions and PICH monitoring occasions for that CN domain, according to 3GPP TS 25.304, based on the stored CN domain specific DRX cycle length, when using DRX in idle mode.~~

8.6.1.2 CN information info

If the IE "CN information info" is present in a message, the UE shall:

- if present, forward the content of the IE "PLMN identity" to upper layer entities of all CN domains;
- if present, forward the content of the IE "CN common GSM-MAP NAS system information" to upper layer entities of all CN domains;
- if the IE "CN domain related information" is present, forward the content of the IE "CN domain specific GSM-MAP NAS system info" to the non-access stratum entity of the UE indicated by the IE "CN domain identity".

8.6.1.3 Signalling connection release indication

If the IE "Signalling Connection release indication" is present in a message, the UE shall release all the radio bearers belonging to the indicated domain, and simultaneously, indicate release of the signalling connection to the upper layer entity of the indicated domain.

8.6.2 UTRAN mobility information elements

8.6.2.1 URA identity

The UE shall:

- if the IE "URA identity" is included in a received message:
  - if the IE "RRC State Indicator" is included and set to "URA_PCH":

- store this URA identity in the variable URA_IDENTITY;
- after sending a possible message to UTRAN and entering URA_PCH state as specified elsewhere, read system information block type 2 in the selected cell;
- if the stored URA identity in the variable URA_IDENTITY is not included in the list of URA identities in System Information Block type 2 in the selected cell, a confirmation error of URA identity list has occurred:
  - if no URA update procedure is ongoing:
    - initiate a URA update procedure after entering URA_PCH state; see subclause 8.3.1.2.
  - if a URA update procedure is ongoing:
    - take actions as specified in subclause 8.3.1.10.

- if the IE "URA identity" is not included in a received message:
  - the IE "RRC State Indicator" is included and set to " URA_PCH":
    - after sending a possible message to UTRAN and entering URA_PCH state as specified elsewhere, read System Information Block type 2 in the selected cell;
    - if System Information Block type 2 in the selected cell contains a single URA identity:
      - store this URA identity in the variable URA_IDENTITY;
      - if System Information Block type 2 of the selected cell contains more than one URA identity, a confirmation error of URA identity list has occurred:
        - if no URA update procedure is ongoing:
          - initiate a URA update procedure after entering URA_PCH state, see subclause 8.3.1.2.
        - if a URA update procedure is ongoing:
          - take actions as specified in subclause 8.3.1.10.

8.6.3 UE information elements [Hans, the indentation changed]

8.6.3.1 Activation time

If the IE "Activation time" is present, the UE shall:

- start using the new configuration present in the same message as this IE at the indicated time;
- if the activation time is not at the TTI boundary of one or more of the affected transport formats:
  - start using the new configuration at the next TTI boundary common to all the affected transport formats.

NOTE: The new configuration is typically a dedicated physical channel present in the same message as the IE "Activation time". The Activation time corresponds to a CFN related to the old configuration.

8.6.3.1a CN domain specific DRX cycle length coefficient

The UE updates CN domain specific DRX cycle length coefficient as specified in [4]. The UE shall use it to calculate the CN domain specific DRX cycle length, according to the following:

- set k to the value of the IE "CN domain specific DRX cycle length coefficient".
- store the result of 2^k *PBP, where PBP is the Paging Block Periodicity, as the CN domain specific DRX cycle length for the CN domain indicated by the IE "CN domain identity". For FDD PBP=1.

The UE shall determine its idle mode paging occasions and PICH monitoring occasions for that CN domain, according to 3GPP TS 25.304, based on the stored CN domain specific DRX cycle length, when using DRX in idle mode.

8.6.3.2 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 *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 3GPP TS 25.304.

The DRX cycle length to use in connected mode is the shorter of the following two parameters:

- 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 exists to that CN domain.

8.6.3.3 Generic state transition rules depending on received information elements

The IE "RRC State Indicator" indicates the state the UE shall enter. The UE shall, if the IE "RRC State Indicator" in the received message has the value:

- "CELL_FACH":
  - enter CELL_FACH state as dictated by the procedure governing the message received.
- "CELL_DCH":
  - if neither DPCH is assigned in the message nor is the UE is CELL_DCH
    - set the variable INVALID_CONFIGURATION to TRUE;
  - else
    - enter CELL_DCH state as dictated by the procedure governing the message received.
- "CELL_PCH":
  - if the received message is RRC CONNECTION SETUP and IE "RRC State Indicator" is set to CELL_PCH
    - transmit a new RRC CONNECTION SETUP REQUEST message as per subclause 8.1.3.8.
  - else
    - enter CELL_PCH state as dictated by the procedure governing the message received.
- "URA_PCH":
  - if the received message is RRC CONNECTION SETUP and IE "RRC State Indicator" is set to URA_PCH
    - transmit a new RRC CONNECTION SETUP REQUEST message as per subclause 8.1.3.8.
  - else
    - enter URA_PCH state as dictated by the procedure governing the message received.

8.6.3.4 Ciphering mode info

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

- if IE "Ciphering mode command" has the value "start/restart", the UE shall:
  - start or restart ciphering, using the ciphering algorithm (UEA [3GPP TS 33.102]) indicated by the IE "Ciphering algorithm" as part of the new ciphering configuration. The new ciphering configuration shall be applied as specified below.
  - set the variable CIPHERING_STATUS to "Started".
- if the IE "Ciphering mode command" has the value "stop", the UE shall
  - stop ciphering. The new ciphering configuration shall be applied as specified below
  - set the variable CIPHERING_STATUS to "Not started".
- in case the IE "Ciphering mode command" has the value "start/restart" or "stop", the new ciphering configuration shall be applied as follows:
  - if the IE "Ciphering activation time for DPCH" is present in the IE "Ciphering mode info", the UE shall apply the new configuration at that time for radio bearers using RLC-TM. If the IE "Ciphering mode info" is present in a message reconfiguring RB, transport channel or physical channel, the indicated time in IE "Activation time for DPCH" corresponds to a CFN after that reconfiguration.
  - if the IE "Radio bearer downlink ciphering activation time info" is present in the IE "Ciphering mode info", the UE shall apply the following procedure for each radio bearer using RLC-AM and RLC-UM indicated by the IE "RB identity":
    - suspend data transmission on the radio bearer
    - store the "RLC send sequence number" for that radio bearer in the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, at which time the new ciphering configuration shall be applied.
    - when the data transmission of that radio bearer is resumed, the UE shall switch to the new ciphering configuration according to the following:
      - use the old ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number smaller than the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN.
      - use the new ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number greater than or equal to the corresponding RLC sequence number indicated in the IE "Radio bearer uplink ciphering activation time info" sent to UTRAN respectively in the received IE "Radio bearer downlink ciphering activation time info" received from UTRAN
      - for a radio bearer using RLC-AM, when the RLC sequence number indicated in the IE "Radio bearer downlink ciphering activation time info" is not included in the RLC transmission window, the UE may release the old ciphering configuration for that radio bearer.
      - if an RLC reset or re-establishment occurs before the activation time for the new ciphering configuration has been reached, ignore the activation time and apply the new ciphering configuration immediately after the RLC reset or RLC re-establishment.

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

8.6.3.5 Integrity protection mode info

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

- if IE "Integrity protection mode command" has the value "start" and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Not started", the UE shall:
  - if the "Historical status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Never been active":
    - initialise the "Uplink RRC Message sequence number" and "Downlink RRC Message sequence number" for all signalling radio bearers to zero;
    - set the "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to the value "Has been active";
  - set the "Status" in the variable INTEGRITY_ PROTECTION_INFO to the value "Started";
  - perform integrity protection on the received message as described in subclause 8.5.10.1;
  - use the algorithm (UIA [3GPP TS 33.102]) indicated by the IE "Integrity protection algorithm" contained in the IE "Integrity protection mode info";
  - use the IE "Integrity protection initialisation number", contained in the IE "Integrity protection mode info" as the value of FRESH [3GPP TS 33.102].
- if IE "Integrity protection mode command" has the value "modified" and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started", the UE shall:
  - use the new integrity protection configuration in the downlink at the RRC sequence number indicated by the IE "Downlink integrity protection activation info", included in the IE "Integrity protection mode info";
  - perform integrity protection on the received message as described in subclause 8.5.10.1;
  - if present, use the algorithm indicated by the IE "Integrity protection algorithm" (UIA [TS 33.102]);
  - set the values of the IE "Uplink integrity protection activation info";

If the IE "Integrity protection mode info" is not present, the UE shall not change the integrity protection configuration.

~~8.6.3.6 Configuration of CTCH occasions~~

~~The CTCH, carrying CBS data is mapped onto only one S-CCPCH. If more than one CTCH is defined, the first CTCH that is configured in the list of S-CCPCHs is the one that is used for CBS data.~~

~~The CTCH occasions are identified by the first radio frame of the TTI which can contain CTCH data. The CTCH occasions are fixed on the system frame number cycle 0 .. 4095 (i.e. no modulo calculation) and thus repeated cyclically.~~

~~The CTCH occasions are determined by a set of parameters.~~

~~M_{TTI}: number of radio frames within the TTI of the FACH used for CTCH~~

~~N: period of CTCH allocation on S-CCPCH, integer number of radio frames,~~
~~$M_{TTI} \leq N \leq MaxSFN - K$, where N is a multiple of M_{TTI} (see 3GPP TS 25.212 and 3GPP TS 25.222).~~

~~MaxSFN: maximum system frame number = 4095 (see 3GPP TS 25.402).~~

~~K: CBS frame offset, integer number of radio frames $0 \leq K \leq N-1$ where K is a multiple of M_{TTI} .~~

~~The CTCH occasions are calculated as follows:~~

~~SFN = (K + m N), m = 0, 1,..., M, with M chosen that $K+MN \leq MaxSFN$.~~

~~The parameters N and K are broadcast as system information.~~

~~8.6.3.7 UL Timing Advance~~

~~If the IE "UL Timing Advance Control" is present, the UE shall:~~

- ~~if IE "Uplink Timing Advance Control" has the value "disabled":~~
  - ~~reset timing advance to 0;~~
  - ~~disable calculated timing advance following handover;~~
  - ~~in case of handover start uplink transmissions in the target cell without applying timing advance;~~
- ~~if IE "Uplink Timing Advance Control" has the value "enabled":~~
  - ~~evaluate and apply the timing advance value for uplink transmission as indicated in IE "Uplink Timing Advance" at the CFN indicated in the IE "Activation Time";~~
  - ~~enable UE autonomous timing advance calculation for handover;~~
  - ~~update uplink timing advance as indicated in IE "Uplink Timing Advance" in advance of the UE autonomous timing advance calculation~~

8.6.3.8 Integrity check info

If the IE "Integrity check info" is present the UE shall act as described in subclause 8.5.10.1.

8.6.3.9 New C-RNTI

If the IE "New C-RNTI" is included, the UE shall:

- store the value in the variable C_RNTI, replacing any old stored value;
- use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

8.6.3.10 New U-RNTI

If the IE "New U-RNTI" is included in a received message, the UE shall:

- store the value in the variable U_RNTI, replacing any old stored value.

8.6.3.11 RRC transaction identifier

If the IE "RRC transaction identifier" is included in a received message, the UE shall:

- if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS; and
- if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
  - accept the transaction; and
  - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
- else
  - if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS; or

- if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - resume normal operation as the message was not received and end the procedure;
  - else:
    - if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
      - reject the transaction; and
      - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
      - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

8.6.4 Radio bearer information elements

8.6.4.1 Signalling RB information to setup list

If the IE "Signalling RB information to setup list" is included the UE shall:

for each occurrence of the IE "Signalling RB information to setup":

- use the value of the IE "RB identity" as the identity of the signalling radio bearer to setup;
- perform the actions for the IE "RLC info" as specified in subclause 8.6.4.9, applied for that signalling radio bearer;
- perform the actions for the IE "RB mapping info" as specified in subclause 8.6.4.8, applied for that signalling radio bearer.

- apply a default value of the IE "RB identity" equal to 1 for the first IE "Signalling RB information to setup"; and
- increase the default value by 1 for each occurrence.

8.6.4.2 RAB information for setup

If the IE "RAB information for setup" is included, the procedure is used to establish radio bearers belonging to a radio access bearer, and the UE shall:

- if the radio access bearer identified with the IE "RAB info" does not exist in the variable ESTABLISHED_RABS:
  - create a new entry for the radio access bearer in the variable ESTABLISHED_RABS;
  - store the content of the IE "RAB info" in the entry for the radio access bearer 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 radio bearer in the IE "RB information to setup":
  - perform the actions specified in subclause 8.6.4.3;

- create a new RAB subflow for the radio access bearer;
- number the RAB subflow in ascending order, assigning the smallest number to the RAB subflow corresponding to the first radio bearer in the list;
- store information about the new radio bearer in the entry for the radio access bearer identified by "RAB info" in the variable ESTABLISHED_RABS;

8.6.4.2a RAB information to reconfigure

If the IE "RAB information to reconfigure" is included then the UE shall:

- if the entry for the radio access bearer identified by the IE "CN domain identity" together with the IE "RAB Identity" in the variable ESTABLISHED_RABS already exists:
  - perform the action for the IE "NAS Synchronization Indicator", according to subclause 8.6.4.12;
- otherwise
  - set the variable INVALID_CONFIGURATION to TRUE.

8.6.4.3 RB information to setup

If the IE "RB information to setup" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- perform the actions for the IE "PDCP info", if present, according to subclause 8.6.4.10, applied for the radio bearer;
- perform the actions for the IE "RLC info", according to subclause 8.6.4.9, applied for the radio bearer;
- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer;
- if the variable CIPHERING_STATUS is set to "Started"; and
  - if the IE "Uplink RLC mode" or the IE "Downlink RLC mode" in the IE "RLC info" is set to "AM RLC" or "UM RLC":
    - calculate the START value according to subclause 8.5.9;
    - store the calculated START value in the variable START_VALUE_TO_TRANSMIT;
    - initialise ciphering on the radio bearer using the calculated START value.

8.6.4.4 RB information to be affected

If the IE "RB information to be affected" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer.

8.6.4.5 RB information to reconfigure

If the IE "RB information to reconfigure" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- perform the actions for the IE "PDCP info", if present, according to subclause 8.6.4.10, applied for the radio bearer;
- perform the actions for the IE "RLC info", according to subclause 8.6.4.9, applied for the radio bearer;
- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer;
- if the IE "PDCP SN info" is included:

- perform the actions as specified in 8.6.4.11 applied for the radio bearer;
- if the IE "RB stop/continue" is included; and
  - if the "RB identity" has a value greater than 2; and
    - if the value of the IE "RB stop/continue" is "stop":
      - configure the RLC entity for the radio bearer to stop;
      - set the IE "RB started" in the variable ESTABLISHED_RABS to "stopped" for that radio bearer;
    - if the value of the IE "RB stop/continue" is "continue":
      - configure the RLC entity for the radio bearer to continue;
      - set the IE "RB started" in the variable ESTABLISHED_RABS to "started" for that radio bearer;
  - if the IE "RB identity" is set to a value less than 2:
    - set the variable INVALID_CONFIGURATION to TRUE.

8.6.4.6 RB information to release

If the IE "RB information to release" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- release the entities in lower layers dedicated for that radio bearer;
- if the information about the radio bearer is stored in the variable ESTABLISHED_RABS:
  - delete the information about the radio bearer from the variable ESTABLISHED_RABS;
  - when all radio bearers belonging to the same radio access bearer have been released:
    - indicate release of the radio access bearer to the upper layer entity using the "CN domain identity" together with the "RAB identity" stored in the variable ESTABLISHED_RABS;
    - delete all information about the radio access bearer from the variable ESTABLISHED_RABS.

8.6.4.7 RB with PDCP information

If the IE "RB with PDCP information" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity":

- for the IE "PDCP SN info" perform the actions as specified in subclause 8.6.4.11.

8.6.4.8 RB mapping info

If the IE "RB mapping info" is included, the UE shall, for each transport channel in each multiplexing option of that RB:

- if a "Transport format set" for that transport channel is included in the same message, and the value (index) of any IE "RLC size index" in the IE "RLC size index list" does not correspond to an "RLC size" in the IE transport format set of that transport channel given in the message; or
- if a "Transport format set" for that transport channel is not included in the same message, and the value (index) of any IE "RLC size index" in the IE "RLC size index list" does not correspond to an "RLC size" in the stored transport format set of that transport channel:
  - keep the previously stored multiplexing options for that RB;
  - set the variable INVALID_CONFIGURATION to TRUE;
- else:

- delete all previously stored multiplexing options for that radio bearer;
- store each new multiplexing option for that radio bearer;
- use the multiplexing options applicable for the transport channels to be used;
- configure MAC multiplexing if that is needed in order to use those transport channels;
- use "MAC logical channel priority" when selecting TFC in MAC.

In case IE "RB mapping info" includes IE "Downlink RLC logical channel info" but IE "Number of downlink RLC logical channels" is absent, the parameter values are exactly the same as for the corresponding UL logical channels. In case two multiplexing options are specified for the UL, the first options shall be used as default for the DL. As regards the IE "Channel type", the following rule should be applied to derive the DL channel type from the UL channel included in the IE:

Channel used in UL	DL channel type implied by "same as"
DCH	DCH
RACH	FACH
CPCH	DSCH
USCH	DSCH

8.6.4.9 RLC Info

If the IE "RLC Info" is included, the UE shall:

Configure the transmitting and receiving RLC entities in the UE for that radio bearer accordingly.

8.6.4.10 PDCP Info

If IE "PDCP info" is included, the UE shall:

- Configure the PDCP entity for that radio bearer accordingly.

8.6.4.11 PDCP SN Info

If the IE "PDCP SN Info" is included, the UE shall:

- transfer the sequence number to the PDCP entity for the radio bearer;
- configure the RLC entity for the radio bearer to stop;
- include the current PDCP receive sequence number and the radio bearer identity for the radio bearer in the variable PDCP_SN_INFO.

8.6.4.12 NAS Synchronisation Indicator

If the IE "NAS Synchronisation Indicator" is present in a message, the UE shall forward the content to the non-access stratum entity for the associated RAB at the CFN indicated in the IE "Activation time" in order to synchronise actions in NAS and AS.

8.6.5 Transport channel information elements

8.6.5.1 Transport Format Set

If the IE "transport channel identity" and the IE "Transport format set" is included, the UE shall, for the indicated transport channel:

- if the value (index) of any IE "RB identity" (and "Logical Channel" for RBs using two UL logical channels) in the IE "Logical channel list" does not correspond to a logical channel indicated to be mapped onto this transport channel in any RB multiplexing option (either included in the same message or previously stored and not changed by this message):
  - keep the transport format set if this exists for ~~that~~ that transport channel;
  - set the variable INVALID_CONFIGURATION to TRUE;
- else:
  - remove a previously stored transport format set if this exists for that transport channel;
  - store the transport format set for that transport channel.
  - if the IE "Transport format Set" has the choice "Transport channel type" set to "Dedicated transport channel":
    - calculate the transport block size for all transport formats in the TFS using the following

      TB size = RLC PDU size + MAC header size,

      where:

      - MAC header size is calculated according to 3GPP TS 25.321 if MAC multiplexing is used. Otherwise it is 0 bits.

If neither the IE "transport channel identity" nor the IE "Transport format set" is included, the UE shall:

- consider the stored transport format set as valid information.

The UTRAN should not assign transport formats with different "RLC Size" to any logical channel transferring data using AM RLC. If an AM RLC entity is mapped to two logical channels, UTRAN may configure more than one "RLC Size" for the logical channel transferring control PDUs only.

8.6.5.2 Transport format combination set

If the IE "Transport format combination set" is included, the UE shall for that direction (uplink or downlink):

- remove a previously stored transport format combination set if this exists;
- clear the IE "Duration" in the variable TFC_SUBSET;
- clear the IE "Default TFC subset" in the variable TFC_SUBSET;
- set the IE "Current TFC subset" in the variable TFC_SUBSET to the value indicating "full transport format combination set";
- remove any previous restriction of the transport format combination set;
- store the new transport format combination set present in the IE "Transport format combination set";
- start to respect those transport format combinations.

If the IE "Transport format combination set" is not included and if there is no addition/removal/replacement of transport channels, the UE shall for that direction (uplink or downlink):

- consider a previously stored transport format combination set if this exists as valid information.

For downlink CCTrCHs if no TFCS is stored in the UE the UE shall consider all possible transport format combinations and calculate the possible TFCI values according to the IE transport format combination set.

For downlink CCTrCHs if a TFCS is stored in the UE and

- if the IE "Transport format combination set" is not included and transport channels are deleted in the message, the UE shall:
  - remove the affected transport format combinations from the transport format combination set, recalculate the TFCI values and start to respect those transport format combinations
- if the IE "Transport format combination set" is not included and transport channels are added in the message, the UE shall:
  - consider all possible new combinations to be valid and recalculate the TFCI values and start to respect those transport format combinations. In TDD the new transport format combinations are considered to belong to the TFCS with the ID 1 of DCH type.
- if the IE "Transport format combination set" is not included and transport channels are replaced the UE shall:
  - consider all possible transport format combinations to be valid and calculate the TFCI values accordingly.

If the IE "Transport format combination set" is not included, the TFCI ordering shall correspond to the CTFC ordering.

8.6.5.3 Transport format combination subset

If the IE "Transport format combination subset"("TFC subset") is included, the UE shall:

- if the IE "Minimum allowed Transport format combination index" is included; and
  - if the value of the IE "Minimum allowed Transport format combination index" is outside the range of transport format combinations in the current transport format combination set:
    - consider the TFC subset to be incompatible with the current transport format combination set;
- if the IE "Allowed transport format combination list" is included; and
  - if the value of any of the IEs "Allowed transport format combination" included in the IE "Allowed transport format combination list" is outside the range of transport format combinations in the current transport format combination set:
    - consider the TFC subset to be incompatible with the current transport format combination set;

  if the IE "Non-allowed transport format combination list" is included; and
  - if the value of any of the IEs "Non-allowed transport format combination" included in the IE "Non-allowed transport format combination list" is outside the range of transport format combinations in the current transport format combination set:
    - consider the TFC subset to be incompatible with the current transport format combination set;
- if the IE "Restricted TrCH information" is included:
  - if the value of any of the IEs "Restricted UL TrCH identity" included in the IE "Restricted TrCH information" does not correspond to any of the transport channels for which the current transport format combination set is valid:
    - consider the TFC subset to be incompatible with the current transport format combination set;
  - if the IE "Allowed TFIs" is included; and
    - if the value of any of the IEs "Allowed TFI" included in the IE "Allowed TFIs" does not correspond to a transport format for that transport channel within the current transport format combination set:
      - consider the TFC subset to be incompatible with the current transport format combination set;
- if the UE considers the TFC subset to be incompatible with the current Transport format combination set according to the above:

- keep any previous restriction of the transport format combination set;
- set the variable INVALID_CONFIGURATION to TRUE;

- if the UE does not consider the TFC subset to be incompatible with the current Transport format combination set according to the above:
- restrict the transport format combination set in the uplink to the value of the IE "Transport format combination subset" (in case of TDD for the uplink CCTrCH specified by the IE "TFCS Id");
  - set the value of the IE "Default TFC subset" (in case of TDD for the uplink CCTrCH specified by the IE "TFCS Id") in the variable TFC_SUBSET to the value of the IE "Current TFC subset" in the variable TFC_SUBSET;
  - set the IE "Current TFC subset" (in case of TDD for the uplink CCTrCH specified by the IE "TFCS Id") in the variable TFC_SUBSET to the value of the IE "Transport format combination subset";
  - clear the IE "Duration" in the variable TFC_SUBSET;
  - if the transport format combination subset indicates the "full transport format combination set":
    - any restriction on transport format combination set is released and the UE may use the full transport format combination set.

8.6.5.4 DCH quality target

At physical channel establishment, the UE sets an initial downlink target SIR value based on the received IEs "DCH quality target". The IE "DCH quality target" for a given DCH shall be used by the UE to set the target SIR for the downlink power control in case BLER measurement is possible for this DCH, i.e. CRC exists in all transport formats in downlink TFS.

8.6.5.x1 Added or Reconfigured UL TrCH information

If the IE "Added or Reconfigured UL TrCH information" is included then the UE shall:

- for the transport channel identified by the IE "UL Transport Channel Identity" perform the actions for the IE "Transport Format Set" as specified in subclause 8.6.5.1.

8.6.5.x2 Added or Reconfigured DL TrCH information

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

- if the choice "DL parameters" is set to 'independent':
  - perform the actions for the IE "Transport Format Set" as specified in subclause 8.6.5.1.;
- if the choice "DL parameters" is set to 'same as uplink':
  - store as transport format for this transport channel the transport format associated with the transport channel identified by the IE "UL Transport Channel Identity"
- if the IE "DCH quality target" is included perform the actions specified in subclause 8.6.5.4;
- if the IE "Transparent mode signalling info" is included:
  - consider the messages received on this transport channel to have the message type according to the value of the IE "Type of message";
  - if the choice "Transparent signalling mode" is set to "Mode 1":
    - consider the messages received on this transport channel affect all established DCHs;
  - if the choice "Transparent signalling mode" is set to "Mode 2":

- consider the messages received on this transport channel affect the DCHs identified with the IE "UL controlled transport channels" in the IE "Controlled transport channels list";
- if any of the DCHs identified with the IE "UL controlled transport channels" in the IE "Controlled transport channels list" does not exist:
  - set the variable INVALID_CONFIGURATION to TRUE.

8.6.5.x3 Deleted UL TrCH information

If the IE "Deleted UL TrCH information" is included the UE shall:

- delete any information about the transport channel identified by the IE "UL TrCH identity".

8.6.5.x4 Deleted DL TrCH information

If the IE "Deleted DL TrCH information" is included the UE shall:

- delete any information about the transport channel identified by the IE "DL TrCH identity".

8.6.5.x5 UL Transport channel information common for all transport channels

If the IE " UL Transport channel information common for all transport channels " is included the UE shall:

- perform actions for the IE “TFC subset” as specified in subclause 8.6.5.3;
- if the IE “PRACH TFCS” is included, perform actions for the IE “TFCS” for the selected PRACH as specified in subclause 8.6.5.2;
- if the IE has the choice “mode” set to FDD:
  - perform actions for the IE “UL DCH TFCS” as specified in subclause 8.6.5.2;
- if the IE has the choice “mode” set to TDD:
  - if the IE “Individual UL CCTRCH information” is included:
    - for each TFCS identified by IE “UL TFCS id” perform actions for the IE “UL TFCS” as specified in subclause 8.6.5.2.

8.6.5.x6 DL Transport channel information common for all transport channels

If the IE "DL Transport channel information common for all transport channels" is included the UE shall:

- if the IE “SCCPCH TFCS” is included perform actions for the TFCS of the selected SCCPCH as specified in subclause 8.6.5.2;
- if the IE choice "mode" is set to FDD:
  - if the choice "DL parameters" is set to 'Independent':
    - if the IE "DL DCH TFCS" is included, perform actions as specified 8.6.5.2;
- if the IE choice "mode" is set to TDD:
  - if the IE "Individual DL CCTRCH information" is included:
    - for each DL TFCS identified by the IE "DL TFCS identity":
      - if the IE choice "DL parameters" is set to 'independent':
        - perform actions for the IE "DL TFCS" as specified in 8.6.5.2;
      - if the IE choice "DL parameters" is set to 'same as UL':

- store for that DL TFCS the TFCS identified by the IE "UL DCH TFCS identity".

8.6.5.x7 DRAC static information

If the IE "DRAC static information" is included the UE shall:

- store the content of the IE "Transmission Time Validity";
- store the content of the IE "Time duration before retry";
- store the content of the IE "DRAC Class identity".

8.6.5.x8 TFCS Reconfiguration/Addition Information

If the IE "TFCS Reconfiguration/Addition Information" is included the UE shall:

- store the TFCs to be reconfigured/added indicated in the IE "CTFC information";
- if the IE "Power offset information" is included, perform actions as specified in 25.214.

In order to identify the TFCs included in this IE the UE shall calculate the CTFC as specified in subclause 14.10 and

- if the IE "TFCS Reconfiguration/Addition Information" was included in the IE "TFCI Field 1 Information":
  - ignore for the CTFC calculation any DSCH transport channel that may be assigned;
- if the IE "TFCS Reconfiguration/Addition Information" was included in the IE "TFCI Field 2 Information":
  - ignore for the CTFC calculation any DCH transport channel that may be assigned.

If the IE "TFCS Reconfiguration/Addition Information" is used in case of TFCS "Complete reconfiguration" the UE shall consider the first instance of the IE "CTFC information" as Transport Format Combination 0, the second instance as Transport Format Combination 1 and so on.

If the IE "TFCS Reconfiguration/Addition Information" is used in case of TFCS "Addition" the UE shall insert the new additional(s) TFC into the first available position(s) in the TFCS.

8.6.5.x9 TFCS Removal Information

If the IE "TFCS Removal Information" is included the UE shall:

- remove the TFC indicated by the IE "TFCI" from the current TFCS.

8.6.5.x10 TFCI Field 2 Information

If the IE "TFCI Field 2 Information" is included the UE shall:

- if the IE choice "Signalling method" is set to 'TFCI range'
  - for the first group in the IE "TFCI(field 2) range":
    - apply the Transport Format Combination indicated by the value of the IE "TFCS Information for DSCH (TFCI range method)" to the group of values of TFCI(field 2) between 0 and the IE "Max TFCI(field2) value";
  - for the following groups in the IE "TFCI(field 2) range":
    - apply the Transport Format Combination indicated by the value of the IE "TFCS Information for DSCH (TFCI range method)" to the group of values of TFCI(field 2) between the largest value reached in the previous group plus one and the IE "Max TFCI(field2) value";
- if the IE choice "Signalling method" is set to 'Explicit'
  - perform actions for the IE "TFCS explicit configuration" as specified in subclause 8.6.5.x11.

8.6.5.x11 TFCS Explicit Configuration

If the IE " TFCS Explicit Configuration" is included the UE shall:

- if the IE choice "TFCS representation" is set to 'complete reconfiguration'
  - perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.x8;
- if the IE choice "TFCS representation" is set to 'addition'
  - perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.x8;
- if the IE choice "TFCS representation" is set to 'removal'
  - perform the actions for the IE "TFCS Removal Information" as specified in subclause 8.6.5.x9;
- if the IE choice "TFCS representation" is set to 'replace'
  - perform first the actions for the IE "TFCS Removal Information" as specified in subclause 8.6.5.x9 and then
  - perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.x8.

8.6.6 Physical channel information elements

8.6.6.1 Frequency info

If the IE "Frequency info" is included the UE shall:

- Store that frequency as the active frequency; and
- Tune to that frequency.

If the IE "Frequency info" is not included and the UE has a stored active frequency, the UE shall

- Continue to use the stored active frequency.

~~8.6.6.2 PRACH info and PRACH selection~~

~~The UE shall select a PRACH according to the following rule. The UE shall:~~

- ~~select a default PRACH from the ones indicated in the IE "PRACH info" in System Information Block type 5 (applicable in Idle Mode and Connected Mode) and System Information Block type 6 (applicable in Connected Mode only), as follows:~~
  - ~~if both RACH with 10 ms and 20 ms TTI are indicated in System Information Block type 5 and System Information Block type 6:~~
    - ~~select the appropriate TTI based on power requirements, as specified in subclause 8.6.6.3;~~
  - ~~select a RACH randomly from the ones listed in System Information Block type 5 and System Information Block type 6 as follows:~~

    ~~"Index of selected PRACH" = floor (rand * K)~~

    ~~where K is equal to the number of listed PRACHs which carry an RACH with the above selected TTI, "rand" is a random number uniformly distributed in the range 0,...,1, and "floor" refers to rounding down to nearest integer. RACHs with 10 and 20 ms TTI shall be counted separately. These RACHs shall be indexed from 0 to K-1 in the order of their occurrence in SIB 5 and SIB 6, where RACHs listed in SIB 5 shall be counted first. The random number generator is left to implementation. The scheme shall be~~

~~implemented such that one of the available RACHs is randomly selected with uniform probability. At startup of the random number generator in the UE the seed shall be dependent on the IMSI of the UE or time, thereby avoiding that all UEs select the same RACH;~~

- ~~reselect the default PRACH when a new cell is selected. RACH reselection may also be performed after each transmission of a Transport Block Set on RACH;~~

- ~~for emergency call, the UE is allowed to select any of the available RACHs.~~

~~8.6.6.3 Selection of RACH TTI~~

~~In FDD mode, a RACH may employ either 10 or 20 ms TTI. The supported TTI is indicated as a semi-static parameter of the RACH Transport Format in system information. If in one cell RACHs for both 10 and 20 ms TTI are supported, the UE shall select an appropriate RACH according to the following rule:~~

~~The UE shall first check whether a RACH Transport Format is available which is suitable for the transmission of the current transport Block Set for both 10 and 20 ms TTI. The UE shall:~~

- ~~if the required transport format is available only for one particular TTI:~~
  - ~~select this TTI;~~
  - ~~identify the corresponding RACHs;~~
  - ~~proceed with RACH selection as specified in subclause 8.6.6.2.~~
- ~~if the required transport format is available on both types of RACH, 10 and 20 ms TTI:~~
  - ~~perform TTI selection as follows:~~
    - ~~when the UE calculates the initial preamble transmit power ("Preamble_Initial_Power") as specified in subclause 8.5.7:~~
      - ~~calculate a transmit power margin,~~

~~Margin = {min(Maximum allowed UL tx power, P_MAX) – max(Preamble_Initial_Power, Preamble_Initial_Power + ΔPp-m + 10*log $_{10}$(1 + (β_d /β_c)^2))}~~

~~where "Maximum allowed UL tx power" is the maximum allowed uplink transmit power indicated in system information (in dBm), and P_MAX is the maximum RF output power of the UE (dBm). The margin shall be calculated for 10 ms TTI RACH message gain factors β_d and β_c.~~

~~NOTE: the expression Preamble_Initial_Power + ΔPp-m + 10*log $_{10}$(1 + (β_d /β_c)^2) represents the total RACH message power if the message would be sent after the initial preamble.~~

- ~~if the value of "Margin" calculated for RACH with 10 ms TTI is less than 6 dB:~~
  - ~~select RACH with 20 ms TTI, and proceed as specified in subclause 8.6.6.2.~~
- ~~perform reselection of the RACH TTI only after successful transmission of one Transport Block Set. However in case L1 message transmission on PRACH has failed at least once while using 10 ms TTI, the UE may use the 20 ms TTI RACH for the retransmission. Handling of RACH Message transmission failure is part of general error handling procedure.~~

8.6.6.4 Downlink information for each radio link

If the IE "Downlink information for each radio link" is included in a received message, the UE shall:

- if the UE would enter CELL_DCH state according to subclause 8.6.3.3 applied on the received message:
  - if the IE "Secondary CCPCH info" is included; and
  - if the UE is not capable of simultaneous reception of DPCH and Secondary CCPCH:

- set the variable UNSUPPORTED_CONFIGURATION to TRUE;
- else:
  - if the UE is capable of simultaneous reception of DPCH and SCCPCH:
    - start to receive the indicated Secondary CCPCH;
- act on the other IEs contained in the IE "Downlink information for each radio link" as specified in subclause 8.6.

- if the UE would enter either the CELL_FACH, CELL_PCH or URA_PCH state according to subclause 8.6.3.3 applied on the received message:
  - set the variable INVALID_CONFIGURATION to TRUE.

~~8.6.6.5 Secondary CCPCH info~~

~~In UTRAN Connected mode, the UE shall select the Secondary CCPCH according to the following rules:~~

- ~~in Cell_DCH state:~~
  - ~~select Secondary CCPCH according to subclause 8.6.6.4;~~
- ~~in Cell_FACH state:~~
  - ~~select an SCCPCH from the SCCPCHs listed in System Information Block types 5 and 6 (SIB 5 and SIB 6) based on U-RNTI as follows:~~
  - ~~"Index of selected SCCPCH" = U-RNTI mod K,~~
  - ~~where K is equal to the number of listed SCCPCHs which carry a FACH (i.e., SCCPCHs carrying PCH only shall not be counted). These SCCPCHs shall be indexed from 0 to K-1in the order of their occurrence in SIB 5 and SIB 6, and "Index of selected SCCPCH" identifies the selected SCCPCH. SCCPCHs included in SIB 5 shall be indexed first.~~
- ~~in Cell_PCH and URA_PCH states:~~
  - ~~select an SCCPCH from the SCCPCHs listed in SIB 5 and SIB 6 based on U-RNTI as follows:~~
  - ~~"Index of selected SCCPCH" = U-RNTI mod K,~~
  - ~~where K is equal to the number of listed SCCPCHs which carry a PCH (i.e., SCCPCHs carrying FACH only shall not be counted). These SCCPCHs shall be indexed in the order of their occurrence in system information from 0 to K-1, and "Index of selected SCCPCH" identifies the selected SCCPCH.~~

~~UE shall set CFN in relation to SFN of current cell according to subclause 8.5.15.~~

8.6.6.6 Uplink DPCH info

If the IE "Uplink DPCH info" is included, the UE shall:

- release any active uplink physical channels and activate the given physical channels.

~~8.6.6.7 Downlink DPCH info~~

~~If the IE "Downlink DPCH info" is included, the UE shall:~~

- ~~activate the dedicated physical channels indicated by that IE.~~

~~If the IE "Downlink DPCH info" is included in a message used to establish the first RL(s) for a UE or perform a Timing re-initialised hard handover, the UE shall, after having activated the dedicated physical channels indicated by that IE:~~

- ~~set CFN in relation to SFN of the first RL (cell) listed in that message, according to subclause 8.5.15;~~

~~If the IE "Downlink DPCH info" is included in a message used to perform a Timing re-initialised hard handover, and ciphering is active for any radio bearer using RLC-TM, the UE shall, after having activated the dedicated physical channels indicated by that IE:~~

- ~~increment HFN for RLC-TM by '1';~~

~~If the IE "Downlink DPCH info" is included in a message used to perform a Timing-maintained hard handover, UE shall, after having activated the dedicated physical channels indicated by that IE:~~

- ~~increase CFN (mod 256) by 1 every frame and maintain UL transmission timing.~~

8.6.6.8 Maximum allowed UL TX power

If the IE "Maximum allowed UL TX power" is included, the UE shall:

- keep the UE uplink transmit power below the indicated power value. If the current UE uplink transmit power is above the indicated power value, the UE shall decrease the power to a level below the power value.

The maximum UE transmitter power is defined as the lower of the maximum output power of the UE power class and the maximum allowed UL TX power indicated in this IE. The maximum UE transmitter power shall not be exceeded.

8.6.6.9 PDSCH with SHO DCH Info (FDD only)

If the IE "PDSCH with SHO DCH Info" is included, the UE shall:

- configure itself to receive the PDSCH from the specified radio link within the active set identified by the IE "DSCH radio link identifier";
- if the TFCI has a 'hard' split:
  - if the IE "TFCI(field2) combining set" is included
    - configure the Layer 1 to only soft combine the DPCCH TFCI(field 2) of the radio links within the active set which are identified by the IE "Radio link identifier" in the IE "TFCI(field2) Combining set";
  - if the IE "TFCI combining set" is not included
    - configure the L1 to soft combine the DPCCH TFCI(field 2) of all radio links within the active set.

~~If the IE "PDSCH with SHO DCH Info" is included, the UE shall:~~

- ~~configure itself such that when an allocation on the DSCH is made it will receive the PDSCH from the specified BS within the active set;~~

~~and in cases where the TFCI for the user in question has a 'hard' split (meaning that TFCI(field 1) and TFCI (field 2) have their own individual block coding):~~

- ~~configure the Layer 1 to only soft combine the DPCCH TFCI(field 2) of the radio links within the associated DCH active set which are specified;~~
- ~~infer that the set of radio links for which TFCI (field 2) should be soft combined will include all radio links within the active set if the IE "TFCI combining set" is not included and the sending of the message in which the IE "PDSCH with SHO DCH Info" is being used will result in a transport channel switch from a state in which the DSCH transport channel was not available to a state in which it is available.~~

8.6.6.10 PDSCH code mapping (FDD only)

If the IE "PDSCH code mapping" is included, the UE shall:

- ~~-Configure Layer 1 to support the mapping of TFCI(field 2) values to PDSCH channelisation codes as specified in the IE.~~ use the scrambling code defined by the IE "DL Scrambling Code" to receive the PDSCH;
- if the IE choice "signalling method" is set to 'code range', map the TFCI(field2) values to PDSCH codes in the following way:

- for the first group of the IE "PDSCH code mapping":
  - if the value of the IE "multi-code info" equals 1:
    - map the TFCI(field 2) = 0 to the PDSCH code specified by the IE "Spreading factor" and the code number given by the IE "Code number (for PDSCH code) start";
    - map TFCI(field 2) = 1 to the PDSCH code specified by the IE "Spreading factor" and the code number given by the IE "Code number (for PDSCH code) start"+1;
    - continue this process with unit increments in the value of TFCI(field 2) mapped to unit increments in code number until the code number equals the value of the IE "Code number (for PDSCH code) stop";
  - if the value of the IE "multi-code info" is greater than 1:
    - if the value of the difference between the IE "Code number (for PDSCH code) stop" and the IE "Code number (for PDSCH code) stop" + 1 is not a multiple of the value of the IE "multi-code info"
      - set the variable INVALID_CONFIGURATION to TRUE;
    - map TFCI (field 2)=0 to a set of PDSCH contiguous codes. This code set is specified by the IE "Spreading factor" and code numbers between 'code number start' denoted by the IE "Code number (for PDSCH code) start" and 'code number stop' given by IE "Code number (for PDSCH code) start" - 1 + the value of the IE "multi-code info";
    - continue this process with unit increments in the value of TFCI(field 2) mapped to a set of contiguous codes. This code set is specified by the IE "Spreading factor" and code numbers between 'code number start' = 'code number stop' +1 of the previous TFCI(field2) and 'code number stop'='code number start' - 1 + the value of the IE "multi-code info";
    - stop this process when the 'code number stop' associated to the last TFCI(field2) equals the value of the IE "Code number (for PDSCH code) stop";
- for each of the next groups included in the IE "PDSCH code mapping":
  - continue the process in the same way as for the first group with the TFCI(field 2) value used by the UE to construct its mapping table starting at the largest TFCI(field 2) value reached in the previous group plus one;
- if the value of the IE "Code number (for PDSCH code) start" equals the value of the IE "Code number (for PDSCH code) stop" (as may occur when mapping the PDSCH root code to a TFCI (field 2) value):
  - consider this as defining the mapping between the chanelisation code and a single TFCI (i.e., TFCI(field 2) shall not be incremented twice);

- if the IE choice "signalling method" is set to 'TFCI range', map the TFCI(field2) values to PDSCH codes in the following way:
  - for the first group of the IE "DSCH mapping":
    - map each of the TFCI(field 2) between 0 and the value of the IE "Max TFCI(field2)" to the PDSCH code specified by the IE "Spreading factor (for PDSCH code)" and the code number given by the IE "Code number (for PDSCH code)";
  - for each of the next groups included in the IE "DSCH mapping":
    - map each of the TFCI(field 2) between the IE "Max TFCI(field2) value" specified in the last group plus one and the specified IE "Max TFCI(field2)" in the current group to the PDSCH code specified by the IE "Spreading factor (for PDSCH code)" and the code number given by the IE "Code number (for PDSCH code)";
  - if the value of the IE "multi-code info" is greater than 1, then

- map each value of TFCI (field 2) to a set of PDSCH contiguous codes starting at the channelisation code denoted by the 'code number' parameter and including all codes with code numbers up to and including 'code number' - 1 + the value of the IE "multi-code info";

- if the IE choice "signalling method" is set to 'Explicit', map the TFCI(field2) values to PDSCH codes in the following way:
  - for the first instance on the IE "PDSCH code info":
    - apply the PDSCH code specified by the IE "Spreading factor (for PDSCH code)" and the code number given by the IE "Code number (for PDSCH code)" for TFCI(field2)=0;
  - for the second instance of the IE "PDSCH code info":
    - apply the PDSCH code specified by the IE "Spreading factor (for PDSCH code)" and the code number given by the IE "Code number (for PDSCH code)" for TFCI(field2)=1;
  - continue in a similar way for each next instance of the IE "PDSCH code info";
  - if the value of the IE "multi-code info" is greater than 1, then
    - map each value of TFCI (field 2) to a set of PDSCH contiguous codes starting at the channelisation code denoted by the 'code number' parameter and including all codes with code numbers up to and including 'code number' - 1 + the value of the IE "multi-code info";
- if the IE choice "signalling method" is set to 'Replace', map the TFCI(field2) values to PDSCH codes in the following way:
  - for each instance of the IE "Replaced PDSCH code":
    - replace the corresponding PDSCH code for the TFCI(field2) identified by the IE "TFCI(field2)" with the new code specified by the IE "Spreading factor (for PDSCH code)" and the code number given by the IE "Code number (for PDSCH code)";
  - if the value of the IE "multi-code info" is greater than 1, then
    - map each value of TFCI (field 2) to a set of PDSCH contiguous codes starting at the channelisation code denoted by the 'code number' parameter and including all codes with code numbers up to and including 'code number' - 1 + the value of the IE "multi-code info";

8.6.6.11 Uplink DPCH power control info

The UE shall:

- in FDD:
  - if the IE "Uplink DPCH power control info" is included:
    - calculate and set an initial uplink transmission power;
    - start inner loop power control as specified in subclause 8.5.3;
    - for the UL inner loop power control:
      - use the parameters specified in the IE.
- in TDD:
  - if the IE "Uplink DPCH power control info" is included:
    - use the parameters specified in the IE for open loop power control as defined in subclause 8.5.7.
- both in FDD and TDD;

- if the IE "Uplink DPCH power control info" is not included:
  - use the current uplink transmission power.

8.6.6.12 Secondary CPICH info

If the IE Secondary CPICH info is included, the UE:

- May use the channelisation code according to IE "channelisation code", with scrambling code according to IE "DL scrambling code" in the IE "Secondary CPICH info", for channel estimation of that radio link;
- May use the pilot bits on DPCCH for channel estimation.

8.6.6.13 Primary CPICH usage for channel estimation

If the IE "Primary CPICH usage for channel estimation" is included and has the value "Primary CPICH may be used" the UE:

- may use the Primary CPICH for channel estimation;
- may use the pilot bits on DPCCH for channel estimation.

If the IE "Primary CPICH usage for channel estimation" is included and has the value "Primary CPICH shall not be used" the UE:

- shall not use the Primary CPICH for channel estimation;
- may use the Secondary CPICH for channel estimation
- may use the pilot bits on DPCCH for channel estimation.

8.6.6.14 DPCH frame offset

If the IE "DPCH frame offset" is included the UE shall:

- use its value to determine the beginning of the DPCH frame

8.6.6.15 DPCH Compressed mode info

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" are included, the UE shall:

- update each pattern sequence to the variable TGPS_IDENTITY according to the IE "TGPSI";
- update into the variable TGPS_IDENTITY the configuration information defined by IE group" transmission gap pattern sequence configuration parameters ";
- activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" at the time indicated by IE "TGCFN" and begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
- monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified in subclause 8.2.11.2;

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is not included, the UE shall:

- activate, at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" and begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;

- deactivate, at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "deactivate" and terminate the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each deactivated pattern sequence;

8.6.6.16 Repetition period, Repetition length, Offset (TDD only)

~~The following description applies to TDD only.~~

The frame allocation can be derived by following rules:

If no IE "Offset" is explicitly given, the parameter "Offset" to be used is calculated by the following equation:

Activation time mod Repetition period = Offset.

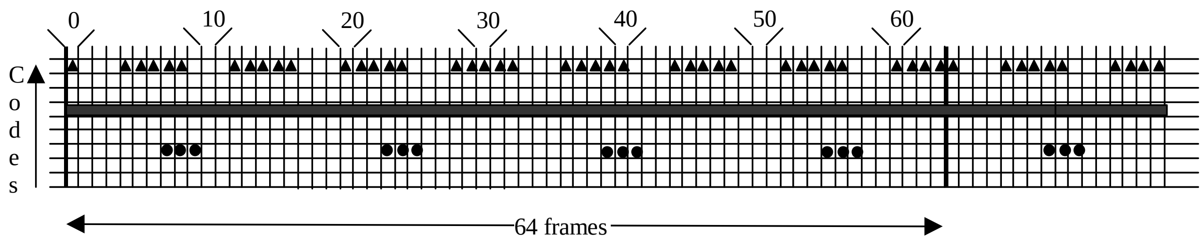
Frames from CFN CFN_{off} to CFN_{off} + Repetition length belong to the allocation with CFN_{off} fulfilling the following equation:

CFN_{off} mod Repetition period = Offset.

Repetition length is always a multiple of the largest TTI within the CCTrCH fulfilling the following equation:

(largest TTI within CCTrCH) * X = Repetition Length

Example of usage:



▲ physic. channel (Code 7; Repetition period=8; Repetition length=5; Activation time = 4 => Offset = 4 => CFN_{off} = 4, 12, 20, 28, 36, 44, 52, 60)

■ physic. channel (Code 5; Repetition Period=1 => Repetition length=0; Offset = 0 => CFN_{off} = 0, 1, 2, 3, 4, ... (continuous allocation))

● physic. channel (Code 3; Repetition period=16; Repetition length=3; Activation time = 23 =>Offset = 7 => CFN_{off} = 7, 23, 39, 55)

Figure 60: Examples for frame allocations in TDD

8.6.6.17 Primary CCPCH info

If the IE "Primary CCPCH info" in TDD and the IE "New C-RNTI" are included and the message including these IEs is used to initiate a state transition to CELL_FACH, the UE shall:

- select the cell indicated by the IE "Primary CCPCH info";
- use the given C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

8.6.6.18 Primary CPICH info

If the IE "Primary CPICH info" in FDD and the IE "New C-RNTI" a are included and the message including these IEs is used to initiate a state transition to CELL_FACH, the UE shall:

- select the cell indicated by the IE "Primary CPICH info";

- use the given C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

8.6.6.19 CPCH SET Info (FDD only)

If the UE has the capability to use CPCH, the UE shall use the following general procedures:

- if an IE "CPCH SET Info" is included in a dedicated message:
  - read the "CPCH set ID" included in the IE;
  - store the IE using the "CPCH set ID" as an address tag;
  - release any active dedicated physical channels in the uplink;
  - let the PCPCHs listed in the CPCH set be the default in the uplink for CPCH;
- if an IE "CPCH SET Info" is included in a System Information message:
  - read the "CPCH set ID" included in the IE;
  - store the IE using the "CPCH set ID" as an address tag.

8.6.6.20 CPCH set ID (FDD only)

If the UE has the capability to use CPCH, the UE shall use the following general procedures:

- If an IE "CPCH set ID" is included in a dedicated message and not as part of IE "CPCH SET Info":
  - use the IE as an address tag to retrieve the corresponding stored "CPCH SET Info";
  - release any active dedicated physical channels in the uplink;
  - let the PCPCHs listed in the CPCH set be the default in the uplink for CPCH.
- if an IE "CPCH set ID" is included in a dedicated message and not as part of IE "CPCH SET Info", and if there is no corresponding stored "CPCH SET Info":
  - release any active dedicated physical channels in the uplink;
  - let the last assigned PRACH be the default in the uplink for RACH;
  - obtain current System Information on SCCPCH to obtain and store the "CPCH SET info" IE(s);
  - upon receipt of a "CPCH SET Info" which corresponds to the "CPCH set ID" IE:
    - let the PCPCHs listed in that CPCH set be the default in the uplink for CPCH.

8.6.6.21 Default DPCH Offset Value

The UE shall:

- if the IE "Default DPCH Offset Value" is included:
  - use its value to determine Frame Offset and Chip Offset from the SFN timing in a cell;
- if the IE "Default DPCH Offset Value" is not included:
  - use the previously received value stored in variable DOFF. If there is no previously received value stored in DOFF, the UE should use the value 0.

After transition from CELL_DCH state to other states, the UE shall erase the value stored in variable DOFF.

8.6.6.22 Secondary Scrambling Code, Code Number

The following description applies to FDD.

Code Number can be assigned by following rules:

- When more than one DL DPDCH is assigned per RL, the segmented physical channel shall be mapped on to DL DPDCHs according to 3GPP TS 25.212. When *p* number of DL DPDCHs are assigned to each RL, the first pair of Secondary Scrambling Code and Code Number corresponds to "*PhCH number 1*", the second to "*PhCH number 2"*, and so on until the *p*th to "*PhCH number p*".

8.6.6.23 PDSCH Power Control info

If the IE "PDSCH Power Control info" is included the UE shall:

- configure PDSCH power control with the received values.

If the IE "PDSCH Power Control info" is not included the UE shall:

- continue to use the stored values.

8.6.6.x1 Tx Diversity Mode

If the IE "Tx Diversity Mode" is included the UE shall:

- configure the Layer 1 to use the Tx diversity mode indicated in the IE.

8.6.6.x2 SSDT Information

If the IE "SSDT Information" is included the UE shall:

- configure the size of the S-field in the FBI field on the uplink DPCCH to the value indicated in the IE “S-field”;
- use the length of the temporary cell ID code for SSDT indicated in the IE “Code Word Length”.

8.6.6.x3 UL Timing Advance Control (TDD only)

If the IE "UL Timing Advance Control" is present, the UE shall:

- if IE "Uplink Timing Advance Control" has the value "disabled":
  - reset timing advance to 0;
  - disable calculated timing advance following handover;
  - in case of handover start uplink transmissions in the target cell without applying timing advance;
- if IE "Uplink Timing Advance Control" has the value "enabled":
  - evaluate and apply the timing advance value for uplink transmission as indicated in IE "Uplink Timing Advance" at the CFN indicated in the IE "Activation Time";
  - enable UE autonomous timing advance calculation for handover;
  - update uplink timing advance as indicated in IE "Uplink Timing Advance" in advance of the UE autonomous timing advance calculation

8.6.6.x4 Downlink information common for all radio links

If the IE “Downlink information common for all radio links " is included the UE shall:

- if the IE “Downlink DPCH info common for all radio links " is included:

- perform actions as specified in subclause 8.6.6.e;

- if the IE choice "mode" is set to 'FDD'

  - perform actions for the IE "DPCH compressed mode info" as specified in subclause 8.6.6.15;

  - perform actions for the IE "Tx Diversity mode" as specified in subclause 8.6.6.a;

  - if the IE "SSDT information" is included:

    - perform actions as specified in subclause 8.6.6.b;

- if the IE "Default DPCH Offset value" is included:

  - perform actions as specified in the subclause 8.6.6.21.

8.6.6.x5 Downlink DPCH info common for all radio links

If the IE "Downlink DPCH info common for all radio links" is included the UE shall:

- perform actions for the IE "Timing indicator" and the IE "CFN-targetSFN frame offset" as specified in subclause 8.5.15.2;

- if the IE choice "mode" is set to 'FDD':

  - if the IE "Downlink DPCH power control information" is included:

    - perform actions for the IE "DPC Mode" according to 25.214;

  - if the IE "Downlink rate matching restriction information" is included:

    - store the transport channels which have restrictions on the allowed transport formats;

  - perform actions for the IE "spreading factor";

  - perform actions for the IE "Fixed or Flexible position";

  - perform actions for the IE "TFCI existence";

  - if the IE choice "SF" is set to 256:

    - store the value of the IE "Number of bits for pilot bits"

  - if the IE choice "SF" set to 128:

    - store the value of the IE "Number of bits for pilot bits"

- if the IE choice "mode" is set to 'TDD':

  - perform actions for the IE "Common timeslot info".

If the IE "Downlink DPCH info common for all radio links " is included in a message used to perform a Timing re-initialised hard handover, and ciphering is active for any radio bearer using RLC-TM, the UE shall, after having activated the dedicated physical channels indicated by that IE:

- increment HFN for RLC-TM by '1';

8.6.6.x6 ASC setting (FDD only)

If the IE "ASC setting" is included, the UE shall:

- establish the available signatures for this ASC as specified in the following:

  - renumber the list of available signatures specified in the IE "Available signature" included in the IE "PRACH info" from signature index 0 to signature index N-1, where N is the number of available signatures, starting with the lowest available signature number and continuing in sequence, in the order of increasing signature numbers;

- consider as available signatures for this ASC the signatures included in this renumbered list from the index specified by the IE "Available signature Start Index" to the index specified by the IE "Available signature End Index";

- establish the available access slot sub-channels for this ASC as specified in the following:
  - if the IE "AICH transmission timing" included in the IE "AICH Info" is set to '0'
    - ignore the leftmost bit of the bitstring specified by the IE "Assigned Sub-Channel Number";
    - repeat 4 times the 3 rightmost (least significant) bits of the bitstring specified by the IE "Assigned Sub-Channel Number" to form a bitstring of length 12 bits;
  - if the IE "AICH transmission timing" included in the IE "AICH Info" is set to '1'
    - repeat 3 times the bitstring specified by the IE "Assigned Sub-Channel Number" to form a bitstring of length 12 bits;
  - perform in both cases, for the resulting bitstring (that includes the repetitions) bit-wise logical AND operation with the IE "Available Sub Channel number" included in IE "PRACH info (for RACH)";
  - consider as available sub-channels for this ASC the available sub-channels indicated in the resulting bitstring, after logical AND operation i.e. each bit set to 1 or 0 indicates availability or non-availability, respectively, of sub-channel number *x*, with *x* from 0 to 11, for the respective ASC.

10.3.5 Transport CH Information elements

10.3.5.1 Added or Reconfigured DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Transport channel identity	MP		Transport channel identity 10.3.5.18	
CHOICE DL parameters				
>Independent				
>>TFS	MP		Transport Format Set 10.3.5.23	
>SameAsUL				
>>UL TrCH identity	MP		Transport channel identity 10.3.5.18	Same TFS applies as specified for indicated UL TrCH
DCH quality target	OP		Quality target 10.3.5.10	
Transparent mode signalling info	CV-MessageType		Transparent mode signalling info 10.3.5.17	This IE is not used in RB RELEASE message nor RB RECONFIGURATION message

Condition	Explanation
MessageType	This IE is absent in Radio Bearer Release message and Radio Bearer Reconfiguration message. Otherwise it is OPTIONAL.

10.3.5.2 Added or Reconfigured UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL Transport channel identity	MP		Transport channel identity 10.3.5.18	
TFS	MP		Transport Format Set 10.3.5.23	

NOTE This information element is included within IE "Predefined RB configuration""

10.3.5.3 CPCH set ID

NOTE: Only for FDD.

This information element indicates that this transport channel may use any of the Physical CPCH channels defined in the CPCH set info which contains the same CPCH set ID. The CPCH set ID associates the transport channel with a set of PCPCH channels defined in a CPCH set info IE and a set of CPCH persistency values. The CPCH set info IE(s) and the CPCH persistency values IE(s) each include the CPCH set ID and are part of the SYSTEM INFORMATION message

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		Integer(1...maxCPCHsets)	Identifier for CPCH set info and CPCH persistency value messages

10.3.5.4 Deleted DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Transport channel identity	MP		Transport channel identity 10.3.5.18	

10.3.5.5 Deleted UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL Transport channel identity	MP		Transport channel identity 10.3.5.18	

10.3.5.6 DL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SCCPCH TFCS	OP		Transport Format Combination Set 10.3.5.20	This IE should be absent within IE "Predefined RB configuration"
CHOICE *mode*	OP			
>FDD				
>>CHOICE DL parameters	MP			
>>>Independent				
>>>>DL DCH TFCS	OP		Transport Format Combination Set 10.3.5.20	
>>>SameAsUL				(no data)
>TDD				
>>Individual DL CCTrCH information	OP	1 to <maxCCTrCH>		
>>>DL TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Identifies a special CCTrCH for shared or dedicated channels.
>>>CHOICE DL parameters	MP			
>>>>Independent				
>>>>>DL TFCS	MP		Transport format combination set 10.3.5.20	
>>>>SameAsUL				
>>>>>UL DCH TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Same TFCS applies as specified for the indicated UL DCH TFCS identity except for information applicable for UL only

NOTE This information element is included within IE "Predefined TrCh configuration"

10.3.5.7 DRAC Static Information

NOTE: Only for FDD.

Contains static parameters used by the DRAC procedure. Meaning and use is described in subclause 14.8.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission Time Validity	MP		Integer(1..256)	number of frames
Time duration before retry	MP		Integer(1..256)	number of frames
DRAC Class Identity	MP		Integer(1..8)	Indicates the class of DRAC parameters to use in SIB10 message

10.3.5.8 Power Offset Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *Gain Factors*	MP			
>Signalled Gain Factors				
>>CHOICE mode				
>>>FDD				
>>>>Gain Factor β_c	MP		Integer (0.. 15)	For UL DPCCH or control part of PRACH or PCPCH
>>>TDD				(no data)
>>Gain Factor β_d	MP		Integer (0..15)	For UL DPDCH or data part of PRACH or PCPCH in FDD and all uplink channels in TDD
>>Reference TFC ID	OP		Integer (0..3)	If this TFC is a reference TFC, indicates the reference ID.
>Computed Gain Factors				
>>Reference TFC ID	MP		Integer (0.. 3)	Indicates the reference TFC Id of the TFC to be used to calculate the gain factors for this TFC. In case of using computed gain factors, at least one signalled gain factor is necessary for reference.
CHOICE mode				
>FDD				
>>Power offset P p-m	OP		Integer(-5..10)	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) Needed only for PRACH
>TDD				(no data)

CHOICE *Gain Factors*	**Condition under which the way to signal the *Gain Factors* is chosen**
Signalled Gain Factors	The values for gain factors β_c (only in FDD mode) and β_d are signalled directly for a TFC.
Computed Gain Factors	The gain factors β_c (only in FDD mode) and β_d are computed for a TFC, based on the signalled settings for the associated reference TFC.

10.3.5.9 Predefined TrCH configuration

This information element concerns a pre- defined configuration of transport channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
Added or Reconfigured TrCH information				
Added or Reconfigured UL TrCH information	MP	1 to <maxTrCH preconf>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
Downlink transport channels				
Added or Reconfigured DL TrCH information	MP	1 to <maxTrCH preconf>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	

10.3.5.10 Quality Target

Information Element/Group name	Need	Multi	Type and reference	Semantics description
BLER Quality value	MP		Real(-6.3 ..0 by step of 0.1)	Signalled value is Log10(Transport channel BLER quality target)

10.3.5.11 Semi-static Transport Format Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission time interval	MP		Integer(10, 20, 40, 80, dynamic)	In ms. The value dynamic is only used in TDD mode
Type of channel coding	MP		Enumerated(No coding, Convolutional, Turbo)	
Coding Rate	CV-Coding		Enumerated(1/2, 1/3)	
Rate matching attribute	MP		Integer(1..hiRM)	
CRC size	MP		Integer(0, 8, 12, 16, 24)	in bits

Condition	Explanation
Coding	This IE is only present if IE "Type of channel coding" is "Convolutional"

10.3.5.12 TFCI Field 2 Information

This IE is used ~~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)). The CTFC(field2) 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) 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) 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 <maxPDSCH-TFCIgroups>		
>>>Max TFCI(field2) value	MP		Integer(1..1023)	This is the Maximum value in the range of TFCI(field2) values for which the specified CTFC(field2) applies
>>>TFCS Information for DSCH (TFCI range method)	MP		TFCS Information for DSCH (TFCI range method) 10.3.5.14	
> Explicit				
>>TFCS explicit configuration	MP		TFCS explicit configuration 10.3.5.13	

CHOICE *Signalling method*	Condition under which *Split type* is chosen
TFCI range	
Explicit	

10.3.5.13 TFCS Explicit 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 Reconfiguration/Addition information 10.3.5.15	
>Addition				
>> TFCS addition information	MP		TFCS Reconfiguration/Addition information 10.3.5.15	
>Removal				

>> TFCS removal information	MP		TFCS Removal Information 10.3.5.16	
>Replace				
>> TFCS removal information	MP		TFCS Removal Information 10.3.5.16	
>> TFCS addition information	MP		TFCS Reconfiguration/Addition information 10.3.5.15	

10.3.5.14 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.~~

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE CTFC Size	MP			
>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..4095)	
>16 bit CTFC				
>>16 bit CTFC	MP		Integer(0..65535)	
>24 bit CTFC				
>>24 bit CTFC	MP		Integer(0..16777215)	

10.3.5.15 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*.~~

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE CTFC Size	MP			
>2 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>2bit CTFC	MP		Integer(0..3)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>4 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>4bit CTFC	MP		Integer(0..15)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>6 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>6 bit CTFC	MP		Integer(0..63)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>8 bit CTFC				
>>CTFC information	MP	1 to <MaxTFC>		
>>>8 bit CTFC	MP		Integer(0..255)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>12 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>12 bit CTFC	MP		Integer(0..4095)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>16 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>16 bit CTFC	MP		Integer(0..65535)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>24 bit CTFC				
>>CTFC information	MP	1 to <MaxTFC>		
>>>24 bit CTFC	MP		Integer(0..16777215)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.

10.3.5.16 TFCS Removal Information

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

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

Range Bound	Explanation
MaxDelTFCcount	Maximum number of Transport Format Combinations to be removed.

10.3.5.17 Transparent mode signalling info

~~This information element points out a transport channel that is used for transparent mode signalling, and which type of message that is sent on the DCCH mapped on that channel.~~

~~There are two modes of this transparent mode signalling. Mode 1 controls all transport channels for one UE. Mode 2 only control a subset of the transport channels for one UE.~~

Information Element	Need	Multi	Type and reference	Semantics description
Type of message	MP		Enumerated (TRANSPORT FORMAT COMBINATION CONTROL)	Indicates which type of message sent on the transparent mode signalling DCCH
CHOICE *Transparent signalling mode*	MP			
>Mode 1				(no data)
>Mode 2				
>>Controlled transport channels list	MP	1 to <maxTrCH>		The transport channels that are effected by the rate control commands sent on this transparent mode DCCH
>>>UL Controlled transport channels	MP		Transport channel identity, 10.3.5.18	

10.3.5.18 Transport channel identity

This information element is used to distinguish transport channels. Transport channels of different type (RACH, CPCH, USCH, FACH/PCH, DSCH or DCH) have separate series of identities. This also holds for uplink and downlink transport channel identities (i.e. for DCH). Depending on in which context a transport channel identity *n* that is sent, it will have different meaning

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channel identity	MP		Integer(1..32)	

10.3.5.19 Transport Format Combination (TFC)

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport format combination	MP		Integer (0.. 1023)	

10.3.5.20 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 TDD, different coded composite transport channels have independent transport format combination sets and thus independent 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. The following two cases exist:

- 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.

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE *TFCI signalling*	MP			'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.
> Normal				
>> TFCI Field 1 Information	MP		TFCS explicit Configuration 10.3.5.13	
> Split				
>> Split type	OP		Enumerated ('Hard', 'Logical')	'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.
>> Length of TFCI(field2)	OP		Integer (1..10)	This IE indicates the length measured in number of bits of TFCI(field2)
>> TFCI Field 1 Information	OP		TFCS explicit Configuration 10.3.5.13	
>> TFCI Field 2 Information	OP		TFCI field 2 information 10.3.5.12	

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

10.3.5.21 Transport Format Combination Set Identity

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer (1...8)	Indicates the identity of every TFCS within a UE. Default value is 1.
Shared Channel Indicator	MP		Boolean	TRUE indicates the use of shared channels. Default is false.

10.3.5.22 Transport Format Combination Subset

Indicates which Transport format combinations in the already defined Transport format combination set are allowed.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Subset representation	MP			
>Minimum allowed Transport format combination index			Transport format combination 10.3.5.19	The integer number is a reference to the *Transport format combination,* which arrived at that position in the *Transport Format Combination Set.*
>Allowed transport format combination list		1 to <maxTFC>		
>>Allowed transport format combination	MP		Transport format combination 10.3.5.19	The integer number is a reference to the *Transport format combination,* which arrived at that position in the *Transport Format Combination Set.*
>Non-allowed transport format combination list		1 to <maxTFC>		
>>Non-allowed transport format combination	MP		Transport format combination 10.3.5.19	The integer number is a reference to the *Transport format combination,* which arrived at that position in the *Transport Format Combination Set.*
>Restricted TrCH information		1 to <maxTrCH >		
>>Restricted UL TrCH identity	MP		Transport channel identity 10.3.5.18	The integer number(s) is a reference to the transport channel that is restricted.
>>Allowed TFIs	OP	1 to <maxTF>		
>>>Allowed TFI	MP		Integer(0..31)	The integer number is a reference to the transport format that is allowed. If no elements are given, all transport formats or the TrCH with non-zero rate are restricted.
>Full transport format combination set				(No data)

10.3.5.23 Transport Format Set

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *Transport channel type*	MP			
>Dedicated transport channels				The transport channel that is configured with this TFS is of type DCH
>>Dynamic Transport Format Information	MP	1 to <maxTF>		Note 1
>>>RLC Size	MP		Integer(0..4992)	Unit is bits Note 2
>>>Number of TBs and TTI List	MP	1 to <maxTF>		Present for every valid number of TB's (and TTI) for this RLC Size.
>>>>Transmission Time Interval	CV-dynamicTTI		Integer(10,20,40,80)	Unit is ms.
>>>>Number of Transport blocks	MP		Integer(0..512)	Note 3
>>>CHOICE *Logical Channel List*	MP			The logical channels that are allowed to use this RLC Size
>>>>ALL			Null	All logical channels mapped to this transport channel.
>>>>Configured			Null	The logical channels configured to use this RLC size in the *RB mapping info*. 10.3.4.21 if present in this message or in the previously stored configuration otherwise
>>>>Explicit List		1 to 15		Lists the logical channels that are allowed to use this RLC size.
>>>>>RB Identity	MP		RB identity 10.3.4.16	
>>>>>LogicalChannel	CH-UL-RLCLogicalChannels		Integer(0..1)	Indicates the relevant UL logical channel for this RB. "0" corresponds to the first, "1" corresponds to the second UL logical channel configured for this RB in the IE "RB mapping info".
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.11	
>Common transport channels				The transport channel that is configured with this TFS is of a type not equal to DCH
>>Dynamic Transport Format Information	MP	1 to <maxTF>		Note
>>>RLC Size	MP		Integer(0..4992)	Unit is bits Note 2
>>>Number of TBs and TTI List	MP	1 to <maxTF>		Present for every valid number of TB's (and TTI) for this RLC Size.
>>>>Number of Transport blocks	MP		Integer(0..512)	Note 3
>>>>CHOICE mode	MP			
>>>>>FDD				(no data)
>>>>>TDD				
>>>>>> Transmission Time Interval	CV-dynamicTTI		Integer(10,20,40,80)	Unit is ms.

>>>CHOICE *Logical Channel List*	MP			The logical channels that are allowed to use this RLC Size
>>>>ALL			Null	All logical channels mapped to this transport channel.
>>>>Configured			Null	The logical channels configured to use this RLC size in the *RB mapping info*. 10.3.4.21 if present in this message or in the previously stored configuration otherwise
>>>>Explicit List		1 to 15		Lists the logical channels that are allowed to use this RLC size.
>>>>>RB Identity	MP		RB identity 10.3.4.16	
>>>>>LogicalChannel	CV-UL-RLCLogicalChannels		Integer(0..1)	Indicates the relevant UL logical channel for this RB. "0" corresponds to the first, "1" corresponds to the second UL logical channel configured for this RB in the IE "RB mapping info".
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.11	

Condition	Explanation
dynamicTTI	This IE is included if dynamic TTI usage is indicated in IE Transmission Time Interval in Semi-static Transport Format Information. Otherwise it is not needed.
UL-RLCLogicalChannels	If "Number of uplink RLC logical channels" in IE "RB mapping info" in this message is 2 or the IE "RB mapping info" is not present in this message and 2 UL logical channels are configured for this RB, then this IE is present. Otherwise this IE is not needed.

NOTE 1: The first instance of the parameter *Number of TBs and TTI List* within the *Dynamic transport format information* correspond to transport format 0 for this transport channel, the second to transport format 1 and so on. The total number of configured transport formats for each transport channel does not exceed <maxTF>.

NOTE: The parameter "rate matching attribute" is in line with the RAN WG1 specifications. However, it is not currently in line with the description in 25.302.

NOTE 2: For dedicated channels, ’RLC size’ reflects RLC PDU size. In FDD for common channels ’RLC size’ reflects actual TB size. In TDD for common channels since MAC headers are not octet aligned, to calculate TB size the MAC header bit offset is added to the specified size (similar to the dedicated case). Therefore for TDD DCH TrCHs the 4 bit C/T is added if MAC multiplexing is applied, for FACH the 3 bit TCTF offset is added and for RACH the 2 bit TCTF offset is added.

NOTE 3: If the number of transport blocks <> 0, and Optional IE "CHOICE RLC mode" or "CHOICE Transport block size is absent, it implies that no RLC PDU data exists but only parity bits exist. If the number of transport blocks = 0, it implies that neither RLC PDU data nor parity bits exist. In order to ensure the possibility of CRC based Blind Transport Format Detection, UTRAN should configure a transport format with number of transport block <> 0, with a zero-size transport block.

10.3.5.24 UL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFC subset	MD		Transport Format Combination Subset 10.3.5.22	Default value is the complete existing set of transport format combinations
PRACH TFCS	OP		Transport format combination set 10.3.5.20	This IE should be absent within IE "Predefined RB configuration"
CHOICE *mode*	OP			
>FDD				
>>UL DCH TFCS	MP		Transport formation combination set 10.3.5.20	
>TDD				
>>Individual UL CCTrCH information	OP	1 to <maxCCTrCH>		
>>>UL TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Identifies a special CCTrCH for shared or dedicated channels.
>>>UL TFCS	MP		Transport format combination set 10.3.5.20	

NOTE This information element is included within IE "Predefined TrCh configuration"

10.3.6 Physical CH Information elements

10.3.6.1 AC-to-ASC mapping

Information Element/Group name	Need	Multi	Type and reference	Semantics description
AC-to-ASC mapping table	MP	maxASCmap		
> AC-to-ASC mapping	MP		Integer(0…7)	Mapping of Access Classes to Access Service Classes (see subclause 8.5.13.)

10.3.6.2 AICH Info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Channelisation code	MP		Integer(0..255)	SF is fixed and equal to 256
STTD indicator	MP		STTD Indicator 10.3.6.78	
AICH transmission timing	MP		Enumerated (0, 1)	See parameter AICH_Transmission_Timing in 3GPP TS 25.211

10.3.6.3 AICH Power offset

NOTE: Only for FDD.

This is the power per transmitted Acquisition Indicator minus power of the Primary CPICH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
AICH Power offset	MP		Integer(-22..+5)	Offset in dB

10.3.6.4 Allocation period info

NOTE: Only for TDD.

Parameters used by UE to determine period of shared channel allocation.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Allocation Activation Time	MP		Integer (1..256)	Frame number start of the allocation period.
Allocation Duration	MP		Integer (1..256)	Total number of frames for the allocation period.

10.3.6.5 Alpha

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Alpha Value	MP		Enumerated(0, 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 1)	

10.3.6.6 ASC setting

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Available signature Start Index	MP		Integer(0..15)	
Available signature End Index	MP		Integer(0..15)	
Assigned Sub-Channel Number	MP		Bitstring(4)	~~See Note below.~~

~~NOTE: The usage of this IE is conditional upon setting of IE "AICH transmission timing". In case that "AICH transmission timing" = 0, the leftmost bit shall be ignored. The 3 rightmost (least significant bits) shall be repeated 4 times to form a bitstring of length 12 bits. In case that "AICH transmission timing" = 1, the bitstring shall be repeated 3 times to form a bitstring of length 12 bits.~~

~~In both cases, for the resulting bitstring (that includes the repetitions) bit-wise logical AND operation with the IE "Available Sub Channel number" included in IE "PRACH info (for RACH)" shall be performed.~~

~~The resulting bitstring, after logical AND operation, indicates the sub-channels assigned to the respective ASC. This bitstring shall be interpreted by the UE in the same way as specified for the IE "Available Sub-Channel Number" , see subclause 10.3.6.61 (i.e. each bit set to 1 or 0 indicates availability or non-availability, respectively, of sub-channel number _x, x= 0 to 11, for the respective ASC).~~

10.3.6.7 Block STTD indicator

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Block STTD indicator	MP		Boolean	TRUE indicates that block STTD is used

10.3.6.8 CCTrCH power control info

Parameters used by UE to set the SIR target value for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
TFCS Identity	OP		Transport Format Combination Set Identity 10.3.5.21	TFCS Identity of this CCTrCH. Default value is 1.
Uplink DPCH power control info	MP		Uplink DPCH power control info 10.3.6.91	

10.3.6.9 Cell parameters Id

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Cell parameter Id	MP		Integer(0..127)	

10.3.6.10 Common timeslot info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
2nd interleaving mode	MD		Enumerated(Frame, Timeslot)	Frame timeslot related interleaving. Default value is "Frame"
TFCI coding	MD		Integer(4,8,16,32)	Describes the way the TFCI bits are coded in bits. Defaults is no TFCI bit: 4 means 1 TFCI bit is coded with 4 bits. 8 means 2 TFCI bits are coded with 8 bits. 16 means 3 – 5 TFCI bits are coded with 16 bits. 32 means 6 – 10 TFCI bits coded with 32 bits.
Puncturing limit	MP		Real(0.40..1.0 by step of 0.04)	
Repetition period	MD		Integer(1, 2,4,8,16,32,64)	Default is continuous allocation. Value 1 indicate continuous
Repetition length	MP		Integer(1.. Repetition period –1)	Note that this is empty if repetition period is set to 1

10.3.6.11 Constant value

This constant value is used by the UE to calculate the initial output power on PRACH according to the Open loop power control procedure. In TDD constant values are used for open loop power control of PRACH, USCH and UL DPCH as defined in section 8.5.7.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Constant value	MP		Integer (-35..-10)	

10.3.6.12 CPCH persistence levels

NOTE: Only for FDD.

This IE is dynamic and is used by RNC for load balancing and congestion control. This is broadcast often in the system information message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		Integer (1 .. <maxCPCHsets>)	Identifier for CPCH set info.
Dynamic persistence level	MP	1 to <maxTF-CPCH>		
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.35	Persistence level for transport format.

10.3.6.13 CPCH set info

NOTE: Only for FDD.

This IE may be broadcast in the System Information message or assigned by SRNC. It is pseudo-static in a cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		CPCH set ID 10.3.5.3	Indicates the ID number for a particular CPCH set allocated to a cell.
TFS	MP		Transport Format Set 10.3.5.23	Transport Format Set Information allocated to this CPCH set.
TFCS	MP		Transport Format Combination Set 10.3.5.20	Transport Format Set Information allocated to this CPCH set
AP preamble scrambling code	MP		Integer (0..79)	Preamble scrambling code for AP in UL
AP-AICH channelisation code	MP		Integer(0..255)	Channelisation code for AP-AICH in DL
CD preamble scrambling code	MP		Integer (0..79)	Preamble scrambling code for CD in UL
CD/CA-ICH channelisation code	MP		Integer (0..255)	Channelisation code for CD/CA-ICH in DL
Available CD access slot subchannel	CV-CDSigPresent	1 to <maxPCPCH-CDsubCh>		Lists the set of subchannels to be used for CD access preambles. Note: if not present, all subchannels are to be used without access delays.
>CD access slot subchannel	MP		Integer (0..11)	
Available CD signatures	OP	1 to <maxPCPCH-CDsig>		Signatures for CD preamble in UL. Note: if not present, all signatures are available for use.
>CD signatures	MP		Integer (0..15)	
DeltaPp-m	MP		Integer (-10..10)	In dB. Power offset between the transmitted CD preamble and UL DPCCH of the power control preamble or message part (added to the preamble power to calculate the power of the UL DPCCH)
UL DPCCH Slot Format	MP		Enumerated (0,1,2)	Slot format for UL DPCCH in power control preamble and in message part
N_start_message	MP		Integer (1..8)	Number of Frames for start of message indication
N_EOT	MP		Integer(0...7)	Actual number of appended EOT indicators is T_EOT = N_TTI * ceil(N_EOT/N_TTI), where N_TTI is the number of frames per TTI and "ceil" refers to rounding up to nearest integer.
Channel Assignment Active	OP		Boolean	When present, indicates that Node B send a CA message and VCAM mapping rule (14.11) shall be used.
CPCH status indication mode	MP		CPCH status indication mode 10.3.6.14	

PCPCH Channel Info.	MP	1 to <maxPCPCHs>		
> UL scrambling code	MP		Integer (0..79)	For PCPCH message part
> DL channelisation code	MP		Integer (0…511)	For DL DPCCH for PCPCH message part
> DL scrambling code	MD		Secondary Scrambling Code 10.3.6.74	Default is the same scrambling code as for the primary CPICH.
> PCP length	MP		Enumerated (0, 8)	Indicates length of power control preamble, 0slots (no preamble used) or 8 slots
> UCSM Info	CV-NCAA			
>>Minimum Spreading Factor	MP		Integer (4,8,16,32,64,128,256)	The UE may use this PCPCH at any Spreading Factor equal to or greater than the indicated minimum Spreading Factor. The Spreading Factor for initial access is the minimum Spreading Factor.
>> NF_max	MP		Integer (1…64)	Maximum number of frames for PCPCH message part
>> Channel request parameters for UCSM	MP	1 to <maxSig>		Required in UE channel selection mode.
>>>Available AP signature	MP	1 to <maxPCPCH-APsig>		AP preamble signature codes for selection of this PCPCH channel.
>>>> AP signature	MP		Integer (0..15)	
>>>Available AP access slot subchannel	OP	1 to <maxPCPCH-APsubCh>		Lists the set of subchannels to be used for AP access preambles in combination with the above AP signature(s). Note: if not present, all subchannels are to be used without access delays.
>>>> AP access slot subchannel	MP		Integer (0..11)	
VCAM info	CV-CAA			
> Available Minimum Spreading Factor	MP	1 to <maxPCPCH-SF>		
>> Minimum Spreading Factor	MP		Enumerated (4,8,16,32,64,128,256)	
>>NF_max	MP		Integer (1..64)	Maximum number of frames for PCPCH message part
>> Maximum available number of PCPCH	MP		Integer (1..64)	Maximum available number of PCPCH for the indicated Spreading Factor.
>> Available AP signatures	MP	1 to <maxPCPCH-APsig>		Signatures for AP preamble in UL.
>>> AP signature			Integer (0..15)	
>> Available AP sub-channel	OP	1 to <maxPCPCH-APsubCh>		AP sub-channels for the given AP signature in UL. Note: if not present, all subchannels are to be used without access delays.
>>> AP sub-channel	MP		Integer (0..11)	

Condition	Explanation
CDSigPresent	This IE may be included if IE "Available CD signatures" is present.
NCAA	This IE is included if IE "Channel Assignment Active" is not present
CAA	This IE is included if IE ""Channel Assignment Active" is present.

10.3.6.14 CPCH Status Indication mode

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH Status Indication mode	MP		Enumerated (PA mode, PAMSF mode)	Defines the status information type broadcast on the CPCH Status Indication Channel (CSICH)

CPCH Status Indication mode defines the structure of the CSICH information which is broadcast by Node B on the CSICH channel. CSICH mode can take 2 values: PCPCH Availability (PA) mode and PCPCH Availability with Minimum Available Spreading Factor (PAMASF) mode. PAMASF mode is used when Channel Assignment is active. PA mode is used when Channel Assignment is not active (UE Channel Selection is active). 3GPP TS25.211 defines the structure of the CSICH information for both CSICH modes.

10.3.6.15 CSICH Power offset

NOTE: Only for FDD.

This is the power per transmitted CSICH Indicator minus power of the Primary CPICH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CSICH Power offset	MP		Integer(-10..+5)	Offset in dB, granularity of 1 dB

10.3.6.16 Default DPCH Offset Value

Indicates the default offset value within interleaving size at a resolution of 512chip (1/5 slot) in FDD and a resolution of one frame in TDD to offset CFN in the UE. This is used to distribute discontinuous transmission periods in time and also to distribute NodeB-RNC transmission traffics in time. Even though the CFN is offset by DOFF, the start timing of the interleaving will be the timing that "CFN mod (interleaving size)"=0 (e.g. interleaving size: 2,4,8) in both UE and SRNC.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE mode				
>FDD				
>>Default DPCH Offset Value (DOFF)	MP		Integer (0..306688 by step of 512)	Number of chips=. 0 to 599 time 512 chips, see TS 25.402.
>TDD				
>>Default DPCH Offset Value (DOFF)	MP		Integer(0..7)	Number of frames; See TS 25.402

10.3.6.17 Downlink channelisation codes

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *codes representation*	MP			
>Consecutive codes				
>>First channelisation code	MP		Enumerated ((16/1)...(16/16))	The codes from First channelisation code to Last channelisation code shall be used in that order by the physical layer in this timeslot. If a TFCI exists in this timeslot, it is mapped in the First channelisation code.
>>Last channelisation code	MP		Enumerated ((16/1)...(16/16))	If this is the same as First channelisation code, only one code is used by the physical layer.
>Bitmap				
>>Channelisation codes bitmap	MP		Bitmap(16)	The first bit in this bitmap corresponds to channelisation code (16/1) the second to (16/2) and so on. A 1 in the bitmap means that the code is used in this timeslot, a 0 that the code is not used. The codes shall be used in the order from (16/1) to (16/16) by the physical layer.

10.3.6.18 Downlink DPCH info common for all RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timing Indication	MP		Enumerated(Initialise, Maintain)	
CFN-targetSFN frame offset	CV TimInd		Integer(0..255)	In frame
CHOICE *mode*				
>FDD				
>>Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	
>>Downlink rate matching restriction information	OP		Downlink rate matching restriction information 10.3.6.31	If this IE is set to "absent", no Transport CH is restricted in TFI.
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>CHOICE *SF*	MP			
>>> SF = 256				
>>>> Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>> SF = 128				
>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>> Otherwise				(no data)
>TDD				
>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info

CHOICE *SF*	Condition under which the given *SF* is chosen
SF=128	"Spreading factor" is set to 128
SF=256	"Spreading factor" is set to 256
Otherwise	"Spreading factor" is set to a value distinct from 128 and 256

Condition	Explanation
TimInd	This IE is OPTIONAL if the IE "Timing Indication" is set to "Initialise". Otherwise it is absent.

10.3.6.19 Downlink DPCH info common for all RL Post

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	

10.3.6.20 Downlink DPCH info common for all RL Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-Andpilot with "number of its for pilot bits" in ASN.1
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>CHOICE *SF*	MP			
>>> SF = 256				
>>>> Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>> SF = 128				
>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>> Otherwise				(no data)
>TDD				
>>Common timeslot info	MP		Common Timeslot Info 10.3.6.10	

CHOICE *SF*	Condition under which the given *SF* is chosen
SF=128	"Spreading factor" is set to 128
SF=256	"Spreading factor" is set to 256
Otherwise	"Spreading factor" is set to a value distinct from 128 and 256

10.3.6.21 Downlink DPCH info for each RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>DPCH frame offset	MP		Integer(0..38144 by step of 256)	Offset (in number of chips) between the beginning of the P-CCPCH frame and the beginning of the DPCH frame This is called $\tau_{DPCH,n}$ in TS 25.211
>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73	
>>DL channelisation code	MP	1 to <maxDPCH-DLchan>		SF of the channelisation code of the data part for each DPCH
>>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>> CHOICE *Spreading factor*	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumber with "code number" in ASN.1
>>>Code number	MP		Integer(0..Spreading factor - 1)	
>>> Scrambling code change	CH SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.
>>TPC combination index	MP		TPC combination index 10.3.6.85	
>>SSDT Cell Identity	OP		SSDT Cell Identity 10.3.6.76	
>>Closed loop timing adjustment mode	CH TxDiversity Mode		Integer(1, 2)	It is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Value in slots
>TDD				
>>DL CCTrCh List	MP	1..<maxCCTrCH>		
>>>TFCS ID	MD		Integer(1..8)	Identity of this CCTrCh. Default value is 1
>>>Time info	MP		Time Info 10.3.6.83	
>>>Downlink DPCH timeslots and codes	MD		Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.
>>>UL CCTrCH TPC List	MD	1..<maxCCTrCH>		UL CCTrCH identities for TPC commands associated with this DL CCTrCH. Default is previous list or all defined UL CCTrCHs

>>>>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21	

Condition	Explanation
SF/2	The information element is mandatory if the UE has an active compressed mode pattern sequence, which is using compressed mode method "SF/2". Otherwise the IE is not needed.
TxDiversity Mode	This IE is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Otherwise the IE is not needed.

10.3.6.22 Downlink DPCH info for each RL Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>Code number	MP		Integer(0..maxCodeNum)	
>>TPC combination index	MP		TPC combination index 10.3.6.85	
>TDD				
>>Downlink DPCH timeslots and codes	MP		Downlink Timeslots and Codes 10.3.6.32	

10.3.6.23 Downlink DPCH power control information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE mode	MP			
>FDD				
>>DPC Mode	MP		Enumerated (Single TPC, TPC triplet in soft)	"Single TPC" is DPC_Mode=0 and "TPC triplet in soft" is DPC_mode=1 in -3GPP TS 25.214.
> TDD				
>>TPC Step Size	OP		Integer (1, 2, 3)	In dB

10.3.6.24 Downlink information common for all radio links

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	OP		Downlink DPCH info common for all RL 10.3.6.18	
CHOICE *mode*				
>FDD				
>>DPCH compressed mode info	MD		DPCH compressed mode info 10.3.6.33	Default value is the existing value of DPCH compressed mode information
>>TX Diversity Mode	MD		TX Diversity Mode 10.3.6.86	Default value is the existing value of TX Diversity mode
>>SSDT information	OP		SSDT information 10.3.6.77	
>TDD				(no data)
Default DPCH Offset Value	OP		Default DPCH Offset Value, 10.3.6.16	

10.3.6.25 Downlink information common for all radio links Post

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Post 10.3.6.19	

10.3.6.26 Downlink information common for all radio links Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Pre 10.3.6.20	
Default DPCH Offset Value	OP		Default DPCH Offset Value, 10.3.6.16	

10.3.6.27 Downlink information for each radio link

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.47	
>>PDSCH code mapping	OP		PDSCH code mapping 10.3.6.43	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57	
Downlink DPCH info for each RL	OP		Downlink DPCH info for each RL 10.3.6.21	
Secondary CCPCH info	OP		Secondary CCPCH info 10.3.6.71	
References to system information blocks	OP	1 to <maxSIB-FACH>		
>Scheduling information	MP		Scheduling information 10.3.8.16	
>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.22	

10.3.6.28 Downlink information for each radio link Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info post 10.3.6.58	
Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL Post 10.3.6.19	

10.3.6.29 Downlink Outer Loop Control

This information element indicates whether the UE is allowed or not to increase its downlink SIR target value above the current value.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Outer loop control	MP		Enumerated(Increase allowed, Increase not allowed)	

10.3.6.30 Downlink PDSCH information

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.47	
>>PDSCH code mapping	OP		PDSCH code mapping 10.3.6.43	

10.3.6.31 Downlink rate matching restriction information

This IE indicates which TrCH is restricted in TFI. DL rate matching should be done based on the TFCS which is the subset of the "DL TFCS with no restricted Transport channel".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Restricted TrCH information	OP	1 to <maxTrCH>		
>Restricted DL TrCH identity	MP		Transport channel identity 10.3.5.18	
>Allowed TFIs	MP	1 to <maxTF>		
>>Allowed TFI	MP		Integer(0..31)	

10.3.6.32 Downlink Timeslots and Codes

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
First Individual timeslot info	MP		Individual timeslot info 10.3.6.37	Individual timeslot info for the first timeslot used by the physical layer.
First timeslot channelisation codes	MP		Downlink channelisation codes 10.3.6.17	These codes shall be used by the physical layer in the timeslot given in First Individual timeslot info.
CHOICE *more timeslots*	MP			
>No more timeslots				(no data)
>Consecutive timeslots				
>>Number of additional timeslots	MP		Integer(1..maxTS-1)	The timeslots used by the physical layer shall be timeslots: N mod maxTS (N+1) mod maxTS ... (N+k) mod maxTS in that order, where N is the timeslot number in the First individual timeslot info and k the Number of additional timeslots. The additional timeslots shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) as the first timeslot.
>Timeslot list				
>>Additional timeslot list	MP	1 to <maxTS-1>		The first instance of this parameter corresponds to the timeslot that shall be used second by the physical layer, the second to the timeslot that shall be used third and so on.
>>>CHOICE *parameters*	MP			
>>>>Same as last				
>>>>>Timeslot number	MP		Timeslot Number 10.3.6.84	The physical layer shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) for this timeslot as for the last one.
>>>>New parameters				
>>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>>>>Channelisation codes	MP		Downlink channelisation codes 10.3.6.17	

10.3.6.33 DPCH compressed mode info

NOTE: Only for FDD.

This information element indicates the parameters of the downlink compressed mode to be used by the UE in order to perform inter-frequency measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence		1 to <maxTGPS>		

>TGPSI	MP		TGPSI 10.3.6.82	
>TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be activated or deactivated.
>TGCFN	MP		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.
>Transmission gap pattern sequence configuration parameters	OP			
>>TGMP	MP		Enumerated(TDD measurement, FDD measurement, GSM carrier RSSI measurement, GSM Initial BSIC identification, GSM BSIC re-confirmation)	Transmission Gap pattern sequence Measurement Purpose.
>>TGPRC	MP		Integer (1..63, Infinity)	The number of transmission gap patterns within the Transmission Gap Pattern Sequence.
>> TGSN	MP		Integer (0..14)	Transmission Gap Starting Slot Number The slot number of the first transmission gap slot within the TGCFN.

>>TGL1	MP		Integer(1..14)	The length of the first Transmission Gap within the transmission gap pattern expressed in number of slots
>> TGL2	MD		Integer (1..14)	The length of the second Transmission Gap within the transmission gap pattern. If omitted, then TGL2=TGL1.
>>TGD	MP		Integer(15..269, undefined)	Transmission gap distance indicates the number of slots between starting slots of two consecutive transmission gaps within a transmission gap pattern. If there is only one transmission gap in the transmission gap pattern, this parameter shall be set to zero.
>> TGPL1	MP		Integer (1..144)	The duration of transmission gap pattern 1.
>> TGPL2	MD		Integer (1..144)	The duration of transmission gap pattern 2. If omitted, then TGPL2=TGPL1.
>>RPP	MP		Enumerated (mode 0, mode 1).	Recovery Period Power control mode during the frame after the transmission gap within the compressed frame. Indicates whether normal PC mode or compressed PC mode is applied
>>ITP	MP		Enumerated (mode 0, mode 1).	Initial Transmit Power is the uplink power control method to be used to compute the initial transmit power after the compressed mode gap.
>>UL/DL mode	MP		Enumerated (UL only, DL only, UL/DL)	Defines whether only DL, only UL, or combined UL/DL compressed mode is used.
>> Downlink compressed mode method	CV DL		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap
>> Uplink compressed mode method	CV UL		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>Downlink frame type	MP		Enumerated (A, B)	
>>DeltaSIR1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the first transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase)
>>DeltaSIRafter1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the first transmission gap in the transmission gap pattern.

>>DeltaSIR2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the second transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) When omitted, DeltaSIR2 = DeltaSIR1.
>>DeltaSIRafter2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the second transmission gap in the transmission gap pattern. When omitted, DeltaSIRafter2 = DeltaSIRafter1.

Condition	Explanation
UL	This information element is only sent when the value of the "UL/DL mode" IE is "UL only" or "UL/DL".
DL	This information element is only sent when the value of the "UL/DL mode" IE is "DL only" or "UL/DL".

10.3.6.34 DPCH Compressed Mode Status Info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence		1 to <maxTGPS>		
> TGPSI	MP		TGPSI 10.3.6.82	Transmission Gap Pattern Sequence Identifier
> TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be active or inactive.
>TGCFN	MP		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.

10.3.6.35 Dynamic persistence level

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Dynamic persistence level	MP		Integer(1..8)	Level shall be mapped to a dynamic persistence value in the range 0 .. 1.

10.3.6.36 Frequency info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE mode	MP			
>FDD				
>>UARFCN uplink (Nu)	OP		Integer(0.. 16383)	[25.101] If IE not present, default duplex distance of 190 MHz shall be used.
>>UARFCN downlink (Nd)	MP		Integer(0 .. 16383)	[25.101]
>TDD				
>>UARFCN (Nt)	MP		Integer(0 .. 16383)	[25.102]

10.3.6.37 Individual timeslot info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timeslot number	MP		Timeslot number 10.3.6.84	Timeslot within a frame
TFCI existence	MP		Boolean	TRUE indicates that the TFCI exists. It shall be coded in the first physical channel of this timeslot.
Midamble Shift and burst type	MP		Midamble shift and burst type 10.3.6.41	

10.3.6.38 Individual Timeslot interference

Parameters used by the UE for uplink open loop power control in TDD.

Information element	Need	Multi	Type and reference	Semantics description
Timeslot number	MP		Timeslot number 10.3.6.84	
UL Timeslot Interference	MP		UL Interference 10.3.6.87	

10.3.6.39 Maximum allowed UL TX power

This information element indicates the maximum allowed uplink transmit power.

Information Element	Need	Multi	Type and reference	Semantics description
Maximum allowed UL TX power	MP		Integer(-50..33)	In dBm

10.3.6.40 Midamble configuration

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Midamble burst type 1	MD		Integer(4, 8,16)	Maximum number of midamble shifts for burst type 1. Default value is 8.
Midamble burst type 2	MD		Integer(3, 6)	Maximum number of midamble shifts for burst type 2. Default value is 3.

Default value is all the subfields set to their default value.

10.3.6.41 Midamble shift and burst type

NOTE: Only for TDD.

This information element indicates burst type and midamble allocation. Three different midamble allocation schemes exist:

- Default midamble: the midamble shift is selected by layer 1 depending on the associated channelisation code (DL and UL)
- Common midamble: the midamble shift is chosen by layer 1 depending on the number of channelisation codes (possible in DL only)
- UE specific midamble: a UE specific midamble is explicitly assigned (DL and UL).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Burst Type	MP			
>Type 1				
>>Midamble Allocation Mode	MP		Enumerated (Default midamble, Common midamble, UE specific midamble)	
>>Midamble Shift	CV UE		Integer(0..15)	
>Type 2				
>>Midamble Allocation Mode	MP		Enumerated (Default midamble, Common midamble, UE specific midamble)	
>>Midamble Shift	CV UE		Integer(0..5)	
>Type 3				
>>Midamble Allocation Mode	MP		Enumerated (Default midamble, UE specific midamble)	
>>Midamble Shift	CV UE		Integer (0..15)	NOTE: Burst Type 3 is only used in uplink.

Condition	Explanation
UE	This information element is only sent when the value of the "Midamble Allocation Mode" IE is "UE-specific midamble".

10.3.6.42 PDSCH Capacity Allocation info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH allocation period info	MP		Allocation Period Info 10.3.6.4	
TFCS ID	MD		Integer(1..8)	Default is 1.
CHOICE *Configuration*	MP			
>Old configuration				
>>PDSCH Identity	MP		Integer(1..HiPDSCHIdentities)	
>New configuration				
>>PDSCH Info	MP		PDSCH Info 10.3.6.44	
>>PDSCH Identity	OP		Integer(1..HiPDSCHIdentities)	
>>PDSCH power control info	OP		PDSCH power control info 10.3.6.45	

10.3.6.43 PDSCH code mapping

NOTE: Only for FDD.

~~This IE indicates the association between each possible value of TFCI(field 2) and the corresponding PDSCH channelisation code(s). There are three fundamentally different ways that the UTRAN must choose between in order to signal the mapping information, these are described below. The signalling capacity consumed by the different methods will vary depending on the way in which the UTRAN configures usage of the DSCH. A fourth option is also provided which allows the UTRAN to replace individual entries in the TFCI(field 2) to PDSCH code mapping table with new PDSCH code values.~~

~~There are four different signalling methods defined. The signalling method shall be selected by the UTRAN.~~

~~Method #1 - Using code range~~

~~The mapping is described in terms of a number of groups, each group associated with a given spreading factor. The UE maps TFCI(field2) values to PDSCH codes in the following way. The PDSCH code used for TFCI(field 2) = 0, is given by the SF and code number = 'PDSCH code start' of Group = 1. The PDSCH code used for TFCI(field 2) = 1, is given by the SF and code number = 'PDSCH code start' + 1. This continues, with unit increments in the value of TFCI(field 2) mapping to unit increments in code number up until the point that code number = 'PDSCH code stop'. The process continues in the same way for the next group with the TFCI(field 2) value used by the UE when constructing its mapping table starting at the largest value reached in the previous group plus one. In the event that 'PDSCH code start' = 'PDSCH code stop' (as may occur when mapping the PDSCH root code to a TFCI (field 2) value) then this is to be interpreted as defining the mapping between the channelisation code and a single TFCI (i.e., TFCI(field 2) should not be incremented twice).~~

~~Note that each value of TFCI (field 2) is associated with a given 'code number' and when the 'multi-code info' parameter is greater than 1, then each value of TFCI (field 2) actually maps to a set of PDSCH codes. In this case contiguous codes are assigned, starting at the channelisation code denoted by the 'code number' parameter and including all codes with code numbers up to and including 'code number' - 1 + the value given in the parameter 'multi-code info'.~~

~~Method #2 - Using TFCI range~~

~~The mapping is described in terms of a number of groups, each group corresponding to a given PDSCH channelisation code. The PDSCH code specified in the first group applies for all values of TFCI(field 2) between 0 and the specified 'Max TFCI(field2)'. The PDSCH code 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)' in the second group. The process continues in the same way for the following groups with the TFCI(field 2) value starting at the largest value reached in the previous group plus one.~~

~~Method #3 - Explicit~~

~~The mapping between TFCI(field 2) value and PDSCH channelisation code is spelt out explicitly for each value of TFCI (field2)~~

This IE indicates the association between each possible value of TFCI(field 2) and the corresponding PDSCH channelisation code(s). The following signalling methods are specified:

- 'code range': the mapping is described in terms of a number of groups, each group associated with a given spreading factor;
- 'TFCI range': the mapping is described in terms of a number of groups, each group corresponding to a given PDSCH channelisation code;
- 'Explicit': the mapping between TFCI(field 2) value and PDSCH channelisation code is spelt out explicitly for each value of TFCI (field2)
- 'Removal': replace individual entries in the TFCI(field 2) to PDSCH code mapping table with new PDSCH code values.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Scrambling Code	MD		Secondary scrambling code 10.3.6.74	Scrambling code on which PDSCH is transmitted. Default is the same scrambling code as for the Primary CPICH
Choice *signalling method*	MP			
>code range				
>>PDSCH code mapping	MP	1 to < maxPDSCH-TFCIgroups >		
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>multi-code info	MP		Integer(1..16)	This parameter indicates the number of PDSCH transmitted to the UE. The PDSCH codes all have the same SF as denoted by the 'Spreading factor' parameter. Contiguous codes are assigned, starting at the channelisation code denoted by the spreading factor and code number parameter and including all codes, with code numbers up to and including 'code number' - 1 + 'multi-code info'. Note that 'code number'-1+'multi-code info' will not be allowed to exceed 'Spreading factor - 1'
>>>>Code number (for PDSCH code) start~~)~~	MP		Integer(0..Spreading factor-1)	
>>>>Code number (for PDSCH code) stop~~)~~	MP		Integer(0..Spreading factor-1)	
>TFCI range				
>>DSCH mapping	MP	1 to < maxPDSCH-TFCIgroups >		
>>>Max TFCI(field2) value	MP		Integer(1..1023)	This is the maximum value in the range of TFCI(field 2) values for which the specified PDSCH code applies
>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	Semantics as described for this parameter above
>Explicit				
>>PDSCH code info	MP	1 to < maxTFCI-2-Combs >		The first instance of the parameter *PDSCH code* corresponds to TFCI (field2) = 0, the second to TFCI(field 2) = 1and so on.

>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	Semantics as described for this parameter above
>Replace				This choice is made if the PDSCH code(s) associated with a given value of TFCI(field 2) is to be replaced.
>>Replaced PDSCH code	MP	1 to < maxTFCI-2-Combs >		Identity of the PDSCH code(s) to be used for the specified value of TFCI(field 2). These code identity(s) replace any that had been specified before
>>>TFCI (field 2)	MP		Integer (0..1023)	Value of TFCI(field 2) for which PDSCH code mapping will be changed
>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	Semantics as described for this parameter above

10.3.6.44 PDSCH info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer(1..8)	TFCS to be used. Default value is 1.
Common timeslot info	OP		Common timeslot info 10.3.6.10	
PDSCH timeslots and codes	OP	1 to <maxTS>	Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.

10.3.6.45 PDSCH Power Control info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TPC Step Size	OP		Integer (1, 2, 3)	In dB
UL CCTrCH TPC List	MP	0..<maxCCTrCH>		UL CCTrCH identities for TPC commands associated with this DL CCTrCH
>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21	

10.3.6.46 PDSCH system information

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH information	MP	1 to <maxPDSCH>		
>PDSCH Identity	MP		Integer(1..HiPDSCHIdentities)	
>PDSCH info	MP		PDSCH info 10.3.6.44	
>SFN Time Info	CH-Block17		SFN Time Info 10.3.6.75	
>DSCH TFS	OP		Transport format set 10.3.5.23	
>DSCH TFCS	OP		Transport Format Combination Set 10.3.5.20	

Condition	Explanation
Block17	This IE is absent in System Information Block 17. Otherwise it is optional.

10.3.6.47 PDSCH with SHO DCH Info

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DSCH radio link identifier	MP		Primary CPICH info 10.3.6.60~~Integer(0..511)~~	This parameter indicates on which radio link the user will be allocated resource on the DSCH~~. The CPICH scrambling code will be used for this purpose.~~
~~TFCI Combining set~~	~~OP~~			~~This is used to indicate which of the downlink TFCI(field 2) transmissions made on the DPCCHs within the active set should be soft combined on the physical layer. This parameter may only be sent if there is a 'hard' split of the TFCI field and in this case the sending of the parameter is optional.~~
TFCI(field2) Combining set~~Radio link identifier~~	OP	1 to <maxRL>		This is used to indicate which of the downlink TFCI(field 2) transmissions made on the DPCCHs within the active set should be soft combined on the physical layer. This parameter may only be sent if there is a 'hard' split of the TFCI field and in this case the sending of the parameter is optional.
>~~Primary CPICH info~~Radio link identifier	MP		Primary CPICH info 10.3.6.60	~~The CPICH scrambling code is used for this purpose~~

10.3.6.48 Persistence scaling factors

This IE defines scaling factors associated with ASC 2 – ASC 7 ~~(multiplicity corresponds to the number of PRACH partitions minus 2)~~ to be applied to the dynamic persistence value. ~~This IE shall not be present in system information if only ASC 0 and ASC 1 are defined. If it is not present for ASC >1, default persistence scaling factor 1 shall be used (see subclause 8.5.12).~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Access Service Class		1 to maxASCpersist		multiplicity corresponds to the number of PRACH partitions minus 2
> Persistence scaling factor	MP		Real(0.9..0.2, by step of 0.1)	Scaling factors in the range 0,…,1

10.3.6.49 PICH Info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Channelisation code	MP		Integer(0..255)	SF is fixed and equal to 256
>>Number of PI per frame	MP		Integer (18, 36 72 144)	
>>STTD indicator	MP		STTD Indicator 10.3.6.78	
>TDD				
>>Channelisation code	MD		Enumerated ((16/1)...(16/16))	Default value is the channelisation code used by the SCCPCH carrying the associated PCH.
>>Timeslot number	MD		Timeslot number 10.3.6.84	Default value is the timeslot used by the SCCPCH carrying the associated PCH.
>> CHOICE Burst Type	MP			
>>>Type 1				
>>>>Midamble Shift	MP		Integer(0..15)	
>>>Type 2				
>>>>Midamble Shift	MP		Integer(0..5)	
>>Repetition period/length	MD		Enumerated((4/2),(8/2), (8/4),(16/2), (16/4), (32/2),(32/4), (64/2),(64/4))	Default value is "(64/2)".
>>Offset	MP		Integer (0...Repetition period -1)	SFN mod Repetitionperiod = Offset.
>>Paging indicator length	MD		Integer (4, 8, 16)	Indicates the length of one paging indicator in Bits. Default value is 4.
>>N_{GAP}	MD		Integer(2, 4, 8)	Number of frames between the last frame carrying PICH for this Paging Occasion and the first frame carrying paging messages for this Paging Occasion. Default value is 4.
>>N_{PCH}	MD		Integer(1 .. 8)	Number of paging groups. Default value is 2.

10.3.6.50 PICH Power offset

This is the power transmitted on the PICH minus power of the Primary CPICH in FDD and Primary CCPCH Tx Power in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PICH Power offset	MP		Integer(-10 .. +5)	Offset in dB

10.3.6.51 PRACH Channelisation Code

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE SF	MP			
>SF16				
>>Channelisation Code List	MP	1 to 8		
>>>Channelisation code	MP		Enumerated ((16/1)...(16/16))	1:1 mapping between spreading code and midamble shift
>SF8				
>>Channelisation Code List	MP	1 to 8		
>>>Channelisation Code	MP		Enumerated((8/1)..(8/8))	

10.3.6.52 PRACH info (for RACH)

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>> Available Signature	MP		Bitstring(16)	(Note1) 0000000000000001:Signature 0 0000000000000010:Signature 1 0000000000000011:Signature 0&1 ....: 1111111111111111:Signature 0to15
>>Available SF	MP		Integer (32,64,128,256)	In chips per symbol Defines the smallest permitted SF (i.e. the maximum rate)
>>Preamble scrambling code number	MP		Integer (0 .. 15)	Identification of scrambling code see TS 25.213
>>Puncturing Limit	MP		Real(0.40..1.00 by step of 0.04)	
>> Available Sub Channel Number	MP		Bitstring(12)	(Note2) 000000000001:SubChNumber 0 000000000010:SubChNumber 1 000000000011:SubChNumber 0&1 ...: 111111111111:SubChNumber 0to11
>TDD				
>>Timeslot number	MP		Timeslot number 10.3.6.84	
>>PRACH Channelisation Code	MP		PRACH Channelisation Code 10.3.6.51	
>>PRACH Midamble	OP		Enumerated (Direct, Direct/Inverted)	Direct or direct and inverted midamble are used for PRACH

NOTE 1: Each bit is 0 or 1 to indicate available signature_x, x= 0 to 15.

NOTE 2: Each bit is 0 or 1 to indicate available sub channel number _x, x= 0 to 11.

10.3.6.53 PRACH partitioning

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE mode				
>FDD				
>>Access Service class	MP	1 to maxASC		
>>>ASC Setting	MD		ASC setting 10.3.6.6	The default values are same as the previous ASC. If the "default" is used for the first ASC, the default values are all available signatures and "all available sub-channels".
>>TDD				
>>>Access Service class List	MP	1 to maxASC		List of Access Service classes
>>>>Access service class Index	MP		Integer(1..8)	
>>>>Repetition Period	MD		Integer(1, 2, 4, 8)	Default value is continuous. Value 1 indicates continuous allocation
>>>>Offset	MP		Integer(0..Repetition Period - 1)	Note that this is empty if repetition period is set to 1

~~The following description applies to FDD only.~~

~~The list of available signatures is renumbered from signature index 0 to signature index N-1, where N is the number of available signatures, starting with the lowest available signature number and continuing in sequence, in the order of increasing signature numbers.~~

- ~~List of available signatures : 16 or less signatures are available.~~
- ~~Ex : only signatures 0, 5, 10 and 15 are available, then :~~
- ~~Signature 0 is : available signature index 0~~
- ~~Signature 5 is : available signature index 1~~
- ~~Signature 10 is : available signature index 2~~
- ~~Signature 15 is : available signature index 3~~

~~The list of available access-slot sub-channels is renumbered from access-slot sub-channel index 0 to access-slot sub-channel index M-1, where M is the number of available access-slot sub-channels, starting with the lowest available access-slot sub-channel number and continuing in sequence, in the order of increasing access-slot sub-channel numbers.~~

- ~~List of available Access Slot channels : 12 or less sub-channels are available.~~
- ~~Ex : only sub-channels 0,1; 4,5; 8,9 are present, then :~~
- ~~Sub-channel 0 is : available sub-channel index 0~~
- ~~Sub-channel 1 is : available sub-channel index 1~~
- ~~Sub-channel 4 is : available sub-channel index 2~~
- ~~Sub-channel 5 is : available sub-channel index 3~~
- ~~Sub-channel 8 is : available sub-channel index 4~~
- ~~Sub-channel 9 is : available sub-channel index 5~~

~~One ASC has access to all the access-slot sub-channels between the Available sub-channel Start Index and the Available sub-channel End Index, and to all the signatures between the Available signature Start Index and the Available signature End Index.~~

~~NOTE: The above text may eventually be moved to a more appropriate location.~~

10.3.6.54 PRACH power offset

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Power Ramp Step	MP		Integer (1..8)	Power step when no acquisition indicator is received in dB
Preamble Retrans Max	MP		Integer (1..64)	Maximum number of preambles in one preamble ramping cycle

10.3.6.55 PRACH system information list

Information element	Need	Multi	Type and reference	Semantics description
PRACH system information	MP	1 .. <maxPRACH>		
>PRACH info	MP		PRACH info (for RACH) 10.3.6.52	
>Transport channel identity	MP		Transport channel identity 10.3.5.18	
>RACH TFS	MD		Transport format set 10.3.5.23	Default value is the value of "RACH TFS" for the previous PRACH in the list (note : the first occurrence is then MP)
>RACH TFCS	MD		Transport Format Combination Set 10.3.5.20	Default value is the value of "RACH TFCS" for the previous PRACH in the list (note : the first occurrence is then MP)
>PRACH partitioning	MD		PRACH partitioning 10.3.6.46	Default value is the value of "PRACH partitioning" for the previous PRACH in the list (note : the first occurrence is then MP)
>Persistence scaling factors	OP		Persistence scaling factors 10.3.6.48	This IE shall not be present if only ASC 0 and ASC 1 are defined. If this IE is absent, value is the value of "Persistence scaling factors" for the previous PRACH in the list if value exists
>AC-to-ASC mapping	OP		AC-to-ASC mapping 10.3.6.1	Only present in SIB 5 If this IE is absent, value is the value of "AC-to-ASC mapping" for the previous PRACH in the list if value exists
>CHOICE *mode*	MP			
>>FDD				
>>>Primary CPICH TX power	MD		Primary CPICH TX power 10.3.6.61	Default value is the value of "Primary CPICH TX power" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>Constant value	MD		Constant value 10.3.6.11	Default value is the value of "Constant value" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>PRACH power offset	MD		PRACH power offset 10.3.6.54	Default value is the value of "PRACH power offset" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>RACH transmission parameters	MD		RACH transmission parameters 10.3.6.67	Default value is the value of "RACH transmission parameters" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>AICH info	MD		AICH info 10.3.6.2	Default value is the value of "AICH info" for the previous PRACH in the list (note : the first occurrence is then MP)
>>TDD				(no data)

NOTE: If the setting of the PRACH information results in that a combination of a signature, preamble scrambling code and subchannel corresponds to a RACH with different TFS and/or TFCS, then for that combination only the TFS/TFCS of the PRACH listed first is valid, where PRACHs listed in System Information Block type 5 shall be counted first.

10.3.6.56 Predefined PhyCH configuration

This information element concerns a pre- defined configuration of physical channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Uplink radio resources				
Uplink DPCH info	MP		Uplink DPCH info Pre 10.3.6.90	
Downlink radio resources				
Downlink information common for all radio links			Downlink information common for all radio links Pre 10.3.6.26	

10.3.6.57 Primary CCPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>TX Diversity indicator	MP		Boolean	
>TDD				
>>CHOICE SyncCase	OP			
>>>Sync Case 1				
>>>>Timeslot	MP		Integer (0...14)	PCCPCH timeslot
>>>Sync Case 2				
>>>>Timeslot	MP		Integer(0..6)	
>>Cell parameters ID	OP		Cell parameters Id 10.3.6.9	The Cell parameters ID is described in 25.223.
>>Block STTD indicator	MP		Block STTD indicator 10.3.6.7	

10.3.6.58 Primary CCPCH info post

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE SyncCase	MP			
>Sync Case 1				
>>Timeslot	MP		Integer (0...14)	PCCPCH timeslot
>Sync Case 2				
>>Timeslot	MP		Integer(0..6)	
Cell parameters ID	MP		Cell parameters Id 10.3.6.9	The Cell parameters ID is described in 25.223.
Block STTD indicator	MP		Block STTD indicator 10.3.6.7	

10.3.6.59 Primary CCPCH TX Power

NOTE: Only for TDD.

Information Element/group name	Need	Multi	Type and reference	Semantics description
Primary CCPCH Tx Power	MP		Integer(6..43)	In dBm

10.3.6.60 Primary CPICH info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary scrambling code	MP		Integer(0..511)	

10.3.6.61 Primary CPICH Tx power

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CPICH Tx Power	MP		Integer(-10..50)	

10.3.6.62 Primary CPICH usage for channel estimation

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Primary CPICH usage for channel estimation	MP		Enumerated(Primary CPICH may be used, Primary CPICH shall not be used)	

10.3.6.63 PUSCH info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer(1..8)	Default value is 1
Common timeslot info	OP		Common timeslot info 10.3.6.10	
PUSCH timeslots and codes	OP		Uplink Timeslots and Codes 10.3.6.94	

10.3.6.64 PUSCH Capacity Allocation info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE PUSCH allocation	MP			
>PUSCH allocation pending				(no data)
>PUSCH allocation assignment				
>>PUSCH allocation period info	MP		Allocation Period Info 10.3.6.4	
>>PUSCH power control info	OP		PUSCH power control info 10.3.6.65	
>>TFCS ID	MD		Integer(1..8)	Default is 1.
>>CHOICE *Configuration*	MP			
>>>Old configuration				
>>>>PUSCH Identity	MP		Integer(1..HiPUSCHIdentities)	
>>>New configuration				
>>>>PUSCH info	MP		PUSCH info 10.3.6.63	
>>>>PUSCH Identity	OP		Integer(1..maxPDSCHIdentity)	

10.3.6.65 PUSCH power control info

NOTE: Only for TDD.

Interference level measured for a frequency at the UTRAN access point used by UE to set PUSCH output power.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL target SIR	MP		Real (-11 .. 20 by step of 0.5)	in dB

10.3.6.66 PUSCH system information

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PUSCH information	MP	1 to <maxPUSCH>		
>PUSCH Identity	MP		Integer(1..HiPUSCHIdentities)	
>PUSCH info	MP		PUSCH info 10.3.6.63	
>SFN Time Info	CH-Block17		SFN Time Info 10.3.6.75	
>USCH TFS	OP		Transport format set 10.3.5.23	
>USCH TFCS	MP		Transport Format Combination Set 10.3.5.20	

Condition	Explanation
Block17	This IE is absent in System Information Block 17. Otherwise it is optional.

10.3.6.67 RACH transmission parameters

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Mmax	MP		Integer(1..32)	Maximum number of preamble cycles
NB01min	MP		Integer(0..50)	Sets lower bound for random back-off
NB01max	MP		Integer(0..50)	Sets upper bound for random back-off

10.3.6.68 Radio link addition information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL 10.3.6.21	
TFCI combining indicator	OP		TFCI combining indicator 10.3.6.81	
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70	Note 1

NOTE 1: These IEs are present when the UE needs to listen to system information on FACH in CELL_DCH state.

10.3.6.69 Radio link removal information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CPICH info	MP		Primary CPICH info 10.3.6.60	

10.3.6.70 SCCPCH Information for FACH

Secondary CCPCH info	MP		Secondary CCPCH info 10.3.6.71	
TFCS	MP		Transport format combination set 10.3.5.20	For FACHs and PCH
FACH/PCH information	MP	1 to <maxFACHPCH>		
>TFS	MP		Transport format set 10.3.5.23	For each FACHs and PCH
References to system information blocks	MP	1 to <maxSIB-FACH>		
>Scheduling information	MP		Scheduling information 10.3.8.16	
>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.22	

10.3.6.71 Secondary CCPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73	May only be sent for SCCPCH channels not carrying the PCH.
>>Secondary scrambling code	OP		Secondary scrambling code 10.3.6.74	May only be sent for SCCPCH channels not carrying the PCH.
>>STTD indicator	MD		STTD Indicator 10.3.6.78	Default value is "TRUE"
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>Code number	MP		Integer(0..Spreading factor - 1)	
>>Pilot symbol existence	MD		Boolean	TRUE means the existence. Default value is "TRUE"
>>TFCI existence	MD		Boolean	TRUE means the existence. Default value is "TRUE"
>>Fixed or Flexible Position	MD		Enumerated (Fixed, Flexible)	Default value is "Flexible"
>>Timing Offset	MD		Integer(0..38144 by step of 256)	Chip Delay of the Secondary CCPCH relative to the Primary CCPCH. Default value is 0.
>TDD				
>>Offset	MD		Integer (0...Repetition Period -1)	SFN modulo Repetition period = offset. Repetition period is the one indicated in the accompanying Common timeslot info IE
>>Common timeslot info	MP		Common timeslot info 10.3.6.10	
>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>Code List	MP	1..<maxCodesCount>		
>>>Channelisation Code	MP		Enumerated((16/1)..(16/16))	

10.3.6.72 Secondary CCPCH system information

Information element	Need	Multi	Type and reference	Semantics description
Secondary CCPCH system information	MP	1 to <maxSCCPCH>		
>Secondary CCPCH info	MP		Secondary CCPCH info 10.3.6.71	Note 1
>TFCS	MD		Transport format set 10.3.5.23	For FACHs and PCH Default value is the value of "TFCS" for the previous SCCPCH in the list (note : the first occurrence is then MP)
>FACH/PCH information	MD	1 to <maxFACHPCH>		Default value is the value of "FACH/PCH" for the previous SCCPCH in the list (note : the first occurrence is then MP)
>>Transport channel identity	MP		Transport channel identity 10.3.5.18	
>>TFS	MP		Transport format set 10.3.5.23	For each FACH 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	OP		PICH info 10.3.6.49	PICH info is present only when PCH is multiplexed on Secondary CCPCH

NOTE 1: The secondary CCPCHs carrying a PCH shall be listed first.

NOTE 2: TFS for PCH shall be the first "FACH/PCH information" in the list if a PCH exists for the respective secondary CCPCH.

10.3.6.73 Secondary CPICH info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
Channelisation code	MP		Integer(0..255)	SF=256

10.3.6.74 Secondary scrambling code

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Secondary scrambling code	MP		Integer(1..15)	

10.3.6.75 SFN Time info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time SFN	MP		Integer (0..4095)	System frame number start of the physical channel existence.
Duration	MP		Integer(1..4096)	Total number of frames the physical channel will exist.

10.3.6.76 SSDT cell identity

NOTE: Only for FDD.

This IE is used to associate a cell identity with a given radio link.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SSDT cell id	MP		Enumerated (a, b, c, d, e, f, g, h)	

10.3.6.77 SSDT information

NOTE: Only for FDD.

This information element indicates the status (e.g. initiated/terminated) of the Site Selection.

Diversity Transmit power control (SSDT). It is used to change the SSDT status. The parameter 'code word set' indicates how cell identities are coded (using many bits or few, values are long, medium, or short).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
S field	MP		Integer (1, 2)	in bits
Code Word Set	MP		Enumerated (long, medium, short, SSDT off)	

NOTE: These parameters shall be set optionally associated with DL DPCH info but not for each RL.

10.3.6.78 STTD indicator

Indicates whether STTD is used or not.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
STTD Indicator	MP		Boolean	TRUE means that STTD is used

10.3.6.79 TDD open loop power control

This information element contains parameters for open loop power control setting for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.59	For path loss calculation
Alpha	OP		Alpha 10.3.6.5	
PRACH Constant Value	OP		Constant Value 10.3.6.11	Operator controlled PRACH Margin
DPCH Constant Value	OP		Constant Value 10.3.6.11	Operator controlled UL DPCH Margin
PUSCH Constant Value	OP		Constant Value 10.3.6.11	Operator controlled PUSCH Margin

10.3.6.80 TFC Control duration

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFC Control duration	MP		Integer (1, 2, 4, 8, 16, 24, 32, 48, 64, 128, 192, 256, 512)	Defines the period in multiples of 10 ms frames for which the defined TFC sub-set is to be applied.

10.3.6.81 TFCI Combining Indicator

NOTE: Only for FDD.

This IE indicates whether the TFCI (field 2) which will be transmitted on the DPCCH of a newly added radio link should be soft combined with the others in the TFCI (field 2) combining set. This IE can only be sent when the UE is in CELL_DCH state with a DSCH transport channel assigned and when there is a 'hard' split in the TFCI field (such that TFCI1 and TFCI2 have their own separate block coding).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCI combining indicator	MP		Boolean	TRUE means that TFCI is combined

10.3.6.82 TGPSI

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPSI	MP		Integer(1..MaxTGPS)	Transmission Gap Pattern Sequence Identifier Establish a reference to the compressed mode pattern sequence. Up to <MaxTGPS> simultaneous compressed mode pattern sequences can be used.

10.3.6.83 Time info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time	MD		Activation time 10.3.3.1	Frame number start of the physical channel existence. Default value is "Now"
Duration	MD		Integer(1..4096, infinite)	Total number of frames the physical channel will exist. Default value is "infinite".

10.3.6.84 Timeslot number

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timeslot number	MP		Integer(0..14)	Timeslot within a frame

10.3.6.85 TPC combination index

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TPC combination index	MP		Integer(0..5)	Radio links with the same index have TPC bits, which for the UE are known to be the same.

10.3.6.86 TX Diversity Mode

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Tx diversity Mode	MP		Enumerated (none, STTD, closed loop mode1, closed loop mode2)	

10.3.6.87 UL interference

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL interference	MP		Integer (-110..-70)	In dBm

NOTE: In TDD, this IE is a timeslot specific value.

10.3.6.88 Uplink DPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info 10.3.6.91	
CHOICE *mode*	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>Scrambling code number	MP		Integer(0..16 777215)	
>>Number of DPDCH	MD		Integer(2..maxDPDCH)	Default value is 1. Number of DPDCH is 1 in HANDOVER TO UTRAN COMMAND
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	SF of the channelisation code for data part
>>TFCI existence	MD		Boolean	TRUE means existence. Default value is "TRUE"
>>Number of FBI bits	CH		Integer (1, 2)	In bits. Number of FBI bits is needed if SSDT or FB Mode Transmit Signalling is supported.
>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>Uplink Timing Advance Control	OP		Uplink Timing Advance Control 10.3.6.96	
>>UL CCTrCH List	MP	1 to <maxCCTrCH>		
>>>TFCS ID	MD		Integer(1..8)	Default value is 1.
>>>Time info	MP		Time info 10.3.6.83	
>>>Common timeslot info	MD		Common timeslot info 10.3.6.10	Default is the current Common timeslot info
>>>Uplink DPCH timeslots and codes	MD		Uplink Timeslots and Codes 10.3.6.94	Default is to use the old timeslots and codes.

Condition	Explanation
Single	This IE is included if IE "Number of DPDCH" is "1"

10.3.6.89 Uplink DPCH info Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	MP		Uplink DPCH power control info Post 10.3.6.92	
CHOICE *mode*	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>Reduced scrambling code number	MP		Integer(0..8191)	Sub-range of values for initial use upon handover to UTRAN.
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	SF of the channelisation code for data part There is only one DPDCH for this case
>TDD				
>>Uplink Timing Advance Control	OP		Uplink Timing Advance Control 10.3.6.96	
>>Uplink DPCH timeslots and codes	MP		Uplink Timeslots and Codes 10.3.6.94	

10.3.6.90 Uplink DPCH info Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info Pre 10.3.6.93	
CHOICE *mode*	MP			
>FDD				
>>TFCI existence	MP		Boolean	TRUE means existence. Default value is "TRUE"
>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>Common timeslot info	MP		Common Timeslot Info 10.3.6.10	

Condition	Explanation
Single	This IE is included if IE "Number of DPDCH" is "1"

10.3.6.91 Uplink DPCH power control info

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and parameters for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>DPCCH Power offset	MP		Integer(-164,..-6 by step of 2)	In dB
>>PC Preamble	MP		Integer (0, 15)	
>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
>>TPC step size	CV algo		Integer (1, 2)	In dB
>TDD				
>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB
>>CHOICE UL OL PC info	MP			
>>>Broadcast UL OL PC info			Null	No data
>>>Individually Signalled	OP			
>>>>Individual timeslot interference info	MP	1 to <maxTS>		
>>>>> Individual timeslot interference	MP		Individual timeslot interference 10.3.6.38	
>>>>DPCH Constant Value	OP		Constant Value 10.3.6.11	Quality Margin
>>>>Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.59	For Pathloss Calculation

Condition	Explanation
algo	The IE is mandatory if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

10.3.6.92 Uplink DPCH power control info Post

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
>>TPC step size	CV algo		Integer (1, 2)	In dB
>TDD				
>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB
>>UL Timeslot Interference	MP		UL Interference 10.3.6.87	

Condition	Explanation
algo	The IE is mandatory if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

10.3.6.93 Uplink DPCH power control info Pre

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and parameters for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>DPCCH Power offset	MP		Integer(-164..-6 by step of 2)	In dB
>>PC Preamble	MP		Integer (0, 15)	
>TDD				(No data)
>>DPCH Constant Value	MP		Constant Value 10.3.6.11	Quality Margin

Condition	Explanation
Algo	The IE is mandatory if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

10.3.6.94 Uplink Timeslots and Codes

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Dynamic SF usage	MP		Boolean	
First Individual timeslot info	MP		Individual timeslot info 10.3.6.37	Individual timeslot info for the first timeslot used by the physical layer.
First timeslot Code List	MP	1..2		Code list used in the timeslot. given in First individual timeslot info.
>Channelisation Code	MP		Enumerated((1/1),)(2/1),(2/2),(4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16))	
CHOICE *more timeslots*	MP			
>No more timeslots				(no data)
>Consecutive timeslots				
>>Number of additional timeslots	MP		Integer(1..maxTS-1)	The timeslots used by the physical layer shall be timeslots: N mod maxTS (N+1) mod maxTS ... (N+k) mod maxTS in that order, where N is the timeslot number in the First individual timeslot info and k the Number of additional timeslots. The additional timeslots shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) as the first timeslot.
>Timeslot list				
>>Additional timeslot list	MP	1 to <maxTS-1>		The first instance of this parameter corresponds to the timeslot that shall be used second by the physical layer, the second to the timeslot that shall be used third and so on.
>>>CHOICE *parameters*	MP			
>>>>Same as last				
>>>>>Timeslot number	MP		Timeslot Number 10.3.6.84	This physical layer shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) for this timeslot as for the last one.
>>>>New parameters				
>>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>>>>Code List	MP	1..2		
>>>>>>Channelisation Code	MP		Enumerated((1/1),)(2/1),(2/2),(4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16))	

10.3.6.95 Uplink Timing Advance

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL Timing Advance	MP		Integer (0..63)	Absolute timing advance value to be used to avoid large delay spread at the NodeB

10.3.6.96 Uplink Timing Advance Control

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Timing Advance	MP			
>Disabled			Null	Indicates that no timing advance is applied
>Enabled				
>>UL Timing Advance	MD		Uplink Timing Advance 10.3.6.95	Absolute timing advance value to be used to avoid large delay spread at the NodeB. Default value is the existing value for uplink timing advance.
>>Activation Time	OP		Activation Time 10.3.3.1	Frame number timing advance is to be applied. This IE is required when a new UL Timing Advance adjustment is specified and Activation Time is not otherwise specified in the RRC message.

```
-- ***************************************************
--
--     PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- ***************************************************

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

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

AccessServiceClass ::=              SEQUENCE {
    availableSignatureStartIndex        INTEGER (0..15),
    availableSignatureEndIndex          INTEGER (0..15),

    assignedSubChannelNumber            BIT STRING (SIZE(4))
}

AccessServiceClassIndex ::=         INTEGER (1..8)

AICH-Info ::=                       SEQUENCE {
    channelisationCode256               ChannelisationCode256,
    sttd-Indicator                      BOOLEAN,
    aich-TransmissionTiming             AICH-TransmissionTiming
}

AICH-PowerOffset ::=                INTEGER (-22..5)

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

AllocationPeriodInfo ::=            SEQUENCE {
    allocationActivationTime            INTEGER (1..256),
    allocationDuration                  INTEGER (1..256)
}
Alpha ::=                           INTEGER (0..8)

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

AP-PreambleScramblingCode ::=       INTEGER (0..79)

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

AP-Signature-VCAM ::=               SEQUENCE {
    ap-Signature                        AP-Signature,
    availableAP-SubchannelList          AvailableAP-SubchannelList OPTIONAL
}

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

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

ASC-RepetitionPeriodAndOffset ::=   CHOICE {
    rp1                                 NULL,
    rp2                                 INTEGER (0..1),
    rp4                                 INTEGER (0..3),
    rp8                                 INTEGER (0..7)
}

ASCSetting ::=                      SEQUENCE {
    -- TABULAR: This is MD in tabular description
    -- Default value is previous ASC
    -- If this is the first ASC, the default value is all available signature and sub-channels
    accessServiceClass                      AccessServiceClass      OPTIONAL
}

AvailableAP-Signature-VCAMList ::=  SEQUENCE (SIZE (1..maxPCPCH-APsig)) OF
                                        AP-Signature-VCAM

AvailableAP-SignatureList ::=       SEQUENCE (SIZE (1..maxPCPCH-APsig)) OF
                                        AP-Signature

AvailableAP-SubchannelList ::=      SEQUENCE (SIZE (1..maxPCPCH-APsubCh)) OF
                                        AP-Subchannel

AvailableMinimumSF-ListVCAM ::=     SEQUENCE (SIZE (1..maxPCPCH-SF)) OF
                                        AvailableMinimumSF-VCAM
```

```
AvailableMinimumSF-VCAM ::=         SEQUENCE {
    minimumSpreadingFactor              MinimumSpreadingFactor,
    nf-Max                              NF-Max,
    maxAvailablePCPCH-Number            MaxAvailablePCPCH-Number,
    availableAP-Signature-VCAMList      AvailableAP-Signature-VCAMList
}

AvailableSignatures ::=         BIT STRING(SIZE(16))

AvailableSubChannelNumbers ::=      BIT STRING(SIZE(12))

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..maxPCPCH-CDsubCh)) OF
                                        CD-AccessSlotSubchannel

CD-CA-ICH-ChannelisationCode ::=    INTEGER (0..255)

CD-PreambleScramblingCode ::=       INTEGER (0..79)

CD-SignatureCode ::=                INTEGER (0..15)

CD-SignatureCodeList ::=            SEQUENCE (SIZE (1..maxPCPCH-CDsig)) OF
                                        CD-SignatureCode

CellParametersID ::=                INTEGER (0..127)

Cfntargetsfnframeoffset ::=             INTEGER(0..255)

ChannelAssignmentActive ::=         CHOICE {
    notActive                           NULL,
    isActive                            AvailableMinimumSF-ListVCAM
}

ChannelisationCode256 ::=           INTEGER (0..255)

ChannelReqParamsForUCSM ::=         SEQUENCE {
    availableAP-SignatureList           AvailableAP-SignatureList,
    availableAP-SubchannelList          AvailableAP-SubchannelList          OPTIONAL
}

ClosedLoopTimingAdjMode ::=         ENUMERATED {
                                        slot1, slot2 }

CodeNumberDSCH ::=                  INTEGER (0..255)

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

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

CommonTimeslotInfo ::=              SEQUENCE {
    -- TABULAR: The IE below is MD, but since it can be encoded in a single
    -- bit it is not defined as OPTIONAL.
    secondInterleavingMode              SecondInterleavingMode,
    tfci-Coding                         TFCI-Coding                         OPTIONAL,
    puncturingLimit                     PuncturingLimit,
    repetitionPeriodAndLength           RepetitionPeriodAndLength           OPTIONAL
}

CommonTimeslotInfoSCCPCH ::=        SEQUENCE {
    -- TABULAR: The IE below is MD, but since it can be encoded in a single
    -- bit it is not defined as OPTIONAL.
    secondInterleavingMode              SecondInterleavingMode,
```

```
    tfci-Coding                         TFCI-Coding                         OPTIONAL,
    puncturingLimit                     PuncturingLimit,
    repetitionPeriodLengthAndOffset     RepetitionPeriodLengthAndOffset     OPTIONAL
}

ConstantValue ::=                   INTEGER (-35..10)

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

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

CPCH-SetInfo ::=                    SEQUENCE {
    cpch-SetID                          CPCH-SetID,
    transportFormatSet                  TransportFormatSet,
    tfcs                                TFCS,
    ap-PreambleScramblingCode           AP-PreambleScramblingCode,
    ap-AICH-ChannelisationCode          AP-AICH-ChannelisationCode,
    cd-PreambleScramblingCode           CD-PreambleScramblingCode,
    cd-CA-ICH-ChannelisationCode        CD-CA-ICH-ChannelisationCode,
    cd-AccessSlotSubchannelList         CD-AccessSlotSubchannelList         OPTIONAL,
    cd-SignatureCodeList                CD-SignatureCodeList                OPTIONAL,
    deltaPp-m                           DeltaPp-m,
    ul-DPCCH-SlotFormat                 UL-DPCCH-SlotFormat,
    n-StartMessage                      N-StartMessage,
    n-EOT                               N-EOT,
    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..maxCPCHsets)) OF
                                        CPCH-SetInfo

CPCH-StatusIndicationMode ::=       ENUMERATED {
                                        pa-mode,
                                        pamsf-mode }

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

-- DefaultDPCH-OffsetValueFDD and DefaultDPCH-OffsetValueTDD corresponds to
-- IE "Default DPCH Offset Value" depending on the mode.
-- Actual value = IE value * 512
DefaultDPCH-OffsetValueFDD ::=      INTEGER (0..599)

DefaultDPCH-OffsetValueTDD ::=      INTEGER (0..7)

DeltaPp-m ::=                       INTEGER (-10..10)

-- Actual value = IE value * 0.1
DeltaSIR ::=                        INTEGER (0..30)

DL-CCTrCh ::=                       SEQUENCE {
    tfcs-Identity                       TFCS-IdentityPlain                  OPTIONAL,
    timeInfo                            TimeInfo,
    dl-CCTrCH-TimeslotsCodes            DownlinkTimeslotsCodes              OPTIONAL,
    ul-CCTrChTPCList                    UL-CCTrChTPCList                    OPTIONAL
}

DL-CCTrChList ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        DL-CCTrCh

DL-ChannelisationCode ::=           SEQUENCE {
    secondaryScramblingCode             SecondaryScramblingCode             OPTIONAL,
    sf-AndCodeNumber                    SF512-AndCodeNumber,
    scramblingCodeChange                ScramblingCodeChange                OPTIONAL
}

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

DL-CommonInformation ::=            SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon          OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD  OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
```

```
            ssdt-Information                    SSDT-Information            OPTIONAL
        },
        tdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD  OPTIONAL
        }
    }
}

DL-CommonInformationPost ::=        SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPost
}

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

DL-CompressedModeMethod ::=         ENUMERATED {
                                        puncturing, sf-2,
                                        higherLayerScheduling }

DL-DPCH-InfoCommon ::=              SEQUENCE {
    cfnHandling                         CHOICE {
        maintain                            NULL,
        initialise                          SEQUENCE {
            cfntargetsfnframeoffset             Cfntargetsfnframeoffset             OPTIONAL
        }
    },
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL,
            dl-rate-matching-restriction        Dl-rate-matching-restriction        OPTIONAL,
            spreadingFactorAndPilot             SF512-AndPilot,
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL
        }
    }
}

DL-DPCH-InfoCommonPost ::=          SEQUENCE {
    dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo                OPTIONAL
}

DL-DPCH-InfoCommonPredef ::=        SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            spreadingFactorAndPilot             SF512-AndPilot,
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            commonTimeslotInfo                  CommonTimeslotInfo
        }
    }
}

DL-DPCH-InfoPerRL ::=               CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
        dcph-FrameOffset                    DPCH-FrameOffset,
        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-DPCH-InfoPerRL-PostFDD ::=                               SEQUENCE {
        pCPICH-UsageForChannelEst               PCPICH-UsageForChannelEst,
```

```
        dl-ChannelisationCode                   DL-ChannelisationCode,
        tpc-CombinationIndex                    TPC-CombinationIndex
}

DL-DPCH-InfoPerRL-PostTDD ::=               SEQUENCE {
    dl-CCTrCH-TimeslotsCodes                    DownlinkTimeslotsCodes
}

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

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

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                                 PrimaryCCPCH-Info
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL                   OPTIONAL,
    secondaryCCPCH-Info                 SecondaryCCPCH-Info                 OPTIONAL
}

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

DL-InformationPerRL-ListPostFDD ::= SEQUENCE (SIZE (1..maxRL)) OF
                                        DL-InformationPerRL-PostFDD

DL-InformationPerRL-PostFDD ::=     SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-PostFDD
}

DL-InformationPerRL-PostTDD ::=     SEQUENCE {
    primaryCCPCH-Info                   PrimaryCCPCH-InfoPost,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-PostTDD
}

DL-PDSCH-Information ::=            SEQUENCE {
    pdsch-SHO-DCH-Info                  PDSCH-SHO-DCH-Info                  OPTIONAL,
    pdsch-CodeMapping                   PDSCH-CodeMapping                   OPTIONAL
}

Dl-rate-matching-restriction ::=    SEQUENCE {
    restrictedTrCH-InfoList             RestrictedTrCH-InfoList             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-ChannelisationCodesShort ::=  SEQUENCE {
    codesRepresentation                 CHOICE {
        consecutive                         SEQUENCE {
            firstChannelisationCode             DL-TS-ChannelisationCode,
            lastChannelisationCode              DL-TS-ChannelisationCode
        },
        bitmap                              BIT STRING (SIZE (16))
    }
}

DownlinkAdditionalTimeslots ::=     SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo              IndividualTimeslotInfo,
```

```
            dl-TS-ChannelisationCodesShort      DL-TS-ChannelisationCodesShort
        }
    }
}

DownlinkTimeslotsCodes ::=      SEQUENCE {
    firstIndividualTimeslotInfo         IndividualTimeslotInfo,
    dl-TS-ChannelisationCodesShort      DL-TS-ChannelisationCodesShort,
    moreTimeslots                       CHOICE {
        noMore                              NULL,
        additionalTimeslots                 CHOICE {
            consecutive                         INTEGER (1..maxTS-1),
            timeslotList                        SEQUENCE (SIZE (1..maxTS-1)) OF
                                                    DownlinkAdditionalTimeslots
        }
    }
}

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
}

DPCH-CompressedModeStatusInfo ::=   SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-SequenceShort

-- TABULAR: Actual value = IE value * 256
DPCH-FrameOffset::=                 INTEGER (0..149)

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

DSCH-MappingList ::=                SEQUENCE (SIZE (1..maxPDSCH-TFCIgroups)) OF
                                        DSCH-Mapping

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

DurationTimeInfo ::=                INTEGER (1..4096)

-- TABULAR : value [Duration = infinite] is the value by default,
-- and is encoded by absence of the full sequence. If the sequence is present,
-- thefield is absent, the default is respectivelyinfinite. Presence of the
-- field absent should not be used, but shall be understood as if the
-- sequence was absent.

DynamicPersistenceLevel ::=         INTEGER (1..8)

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

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

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

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

FrequencyInfo ::=                   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 FrequencyInfoFDD,
        tdd                                 FrequencyInfoTDD    }
}

FrequencyInfoFDD ::=                SEQUENCE {
    uarfcn-UL                           UARFCN              OPTIONAL,
    uarfcn-DL                           UARFCN
}
```

```
FrequencyInfoTDD ::=                SEQUENCE {
    uarfcn-Nt                           UARFCN
}

IndividualTimeslotInfo ::=          SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    tfci-Existence                      BOOLEAN,
    midambleShiftAndBurstType           MidambleShiftAndBurstType
}

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

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

ITP ::=                             ENUMERATED {
                                        mode0, mode1 }

MaxAllowedUL-TX-Power ::=           INTEGER (-50..33)

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

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

MidambleConfiguration ::=           SEQUENCE {
    burstType1                          BurstType1                          DEFAULT ms8,
    -- TABULAR: The default value for BurstType2 has not been specified due to
    -- compactness reasons.
    burstType2                          BurstType2
}

MidambleShiftAndBurstType ::=       SEQUENCE {
    burstType                           CHOICE {
        type1                               SEQUENCE {
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        },
        type2                               SEQUENCE {
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftShort
                }
            }
        },
        type3                               SEQUENCE {
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        }
    }
}

MidambleShiftLong ::=               INTEGER (0..15)


MidambleShiftShort ::=              INTEGER (0..5)

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

MultiCodeInfo ::=                   INTEGER (1..16)


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

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

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

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

NB01 ::=                            INTEGER (0..50)

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

NumberOfDPDCH ::=                   INTEGER (1..maxDPDCH-UL)

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

OpenLoopPowerControl-TDD ::=        SEQUENCE {
    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power,
    alpha                               Alpha                       OPTIONAL,
    prach-ConstantValue                 ConstantValue,
    dpch-ConstantValue                  ConstantValue,
    pusch-ConstantValue                 ConstantValue               OPTIONAL
}
PagingIndicatorLength ::=           ENUMERATED {
                                        pi4, pi8, pi16 }

PC-Preamble ::=                     ENUMERATED {
                                        pcp0, pcp15 }

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

PCPCH-ChannelInfo ::=               SEQUENCE {
    pcpch-UL-ScramblingCode             INTEGER (0..79),
    pcpch-DL-ChannelisationCode         INTEGER (0..511),
    pcpch-DL-ScramblingCode             SecondaryScramblingCode             OPTIONAL,
    pcp-Length                          PCP-Length,
    ucsm-Info                           UCSM-Info                           OPTIONAL
}

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

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

PDSCH-CapacityAllocationInfo ::=    SEQUENCE {
    pdsch-PowerControlInfo              PDSCH-PowerControlInfo              OPTIONAL,
    pdsch-AllocationPeriodInfo          AllocationPeriodInfo,
    tfcs-Identity                       TFCS-IdentityPlain                  OPTIONAL,
    configuration                       CHOICE {
        old-Configuration                   SEQUENCE {
            pdsch-Identity                      PDSCH-Identity
        },
        new-Configuration                   SEQUENCE {
            pdsch-Info                          PDSCH-Info,
            pdsch-Identity                      PDSCH-Identity              OPTIONAL
        }
    }
}

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
    codeNumberStart                     CodeNumberDSCH,
    codeNumberStop                      CodeNumberDSCH
}

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

PDSCH-CodeMapping ::=               SEQUENCE {
    dl-ScramblingCode                   SecondaryScramblingCode             OPTIONAL,
    signallingMethod                    CHOICE {
        codeRange                           CodeRange,
        tfci-Range                          DSCH-MappingList,
        explicit                            PDSCH-CodeInfoList,
```

```
		replace								ReplacedPDSCH-CodeInfoList
	}
}

PDSCH-Identity ::=					INTEGER (1..hiPDSCHidentities)


PDSCH-Info ::=						SEQUENCE {
	tfcs-Identity						TFCS-IdentityPlain					OPTIONAL,
	commonTimeslotInfo					CommonTimeslotInfo					OPTIONAL,
	pdsch-TimeslotsCodes				DownlinkTimeslotsCodes				OPTIONAL
}

PDSCH-PowerControlInfo ::=			SEQUENCE {
	tpc-StepSizeTDD						TPC-StepSizeTDD						OPTIONAL,
	ul-CCTrChTPCList					UL-CCTrChTPCList					OPTIONAL
}

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

PDSCH-SysInfo ::=					SEQUENCE {
	pdsch-Identity						PDSCH-Identity,
	pdsch-Info							PDSCH-Info,
	dsch-TFS							TransportFormatSet					OPTIONAL,
	dsch-TFCS							TFCS								OPTIONAL
}

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

PDSCH-SysInfoList-SFN ::=			SEQUENCE (SIZE (1..maxPDSCH)) OF
										SEQUENCE {
	pdsch-SysInfo							PDSCH-SysInfo,
	sfn-TimeInfo							SFN-TimeInfo					OPTIONAL
}

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

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

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

PICH-Info ::=						CHOICE {
	fdd									SEQUENCE {
		channelisationCode256				ChannelisationCode256,
		pi-CountPerFrame					PI-CountPerFrame,
		sttd-Indicator						BOOLEAN
	},
	tdd									SEQUENCE {
		channelisationCode					TDD-PICH-CCode					OPTIONAL,
		timeslot							TimeslotNumber					OPTIONAL,
		burstType							CHOICE {
			type-1								MidambleShiftLong,
			type-2								MidambleShiftShort
		}																	OPTIONAL,
		repetitionPeriodLengthOffset		RepPerLengthOffset-PICH			OPTIONAL,
		pagingIndicatorLength				PagingIndicatorLength			DEFAULT pi4,
		n-GAP								N-GAP							DEFAULT f4,
		n-PCH								N-PCH							DEFAULT 2
	}
}

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

PilotBits128 ::=					ENUMERATED {
										pb4, pb8 }

PilotBits256 ::=					ENUMERATED {
										pb2, pb4, pb8 }

PositionFixedOrFlexible ::=			ENUMERATED {
										fixed,
										flexible }

PowerControlAlgorithm ::=			CHOICE {
```

```
	algorithm1							TPC-StepSizeFDD,
	algorithm2							NULL
}

PowerRampStep ::=					INTEGER (1..8)

PRACH-Midamble ::=					ENUMERATED {
										direct,
										direct-Inverted }

PRACH-Partitioning ::=				CHOICE {
	fdd									SEQUENCE (SIZE (1..maxASC)) OF
											ASCSetting,
	tdd									SEQUENCE (SIZE (1..maxASC)) OF
											ASC
}

PRACH-PowerOffset ::=				SEQUENCE {
	powerRampStep						PowerRampStep,
	preambleRetransMax					PreambleRetransMax
}

PRACH-RACH-Info ::=					SEQUENCE {
	modeSpecificInfo					CHOICE {
		fdd									SEQUENCE {
			availableSignatures					AvailableSignatures,
			availableSF							SF-PRACH,
			preambleScramblingCodeWordNumber	PreambleScramblingCodeWordNumber,
			puncturingLimit						PuncturingLimit,
			availableSubChannelNumbers			AvailableSubChannelNumbers
		},
		tdd									SEQUENCE {
			timeslot							TimeslotNumber,
			channelisationCode					TDD-PRACH-CCodeList,
			prach-Midamble						PRACH-Midamble				OPTIONAL
		}
	}
}

PRACH-SystemInformation ::=			SEQUENCE {
	prach-RACH-Info						PRACH-RACH-Info,
	transportChannelIdentity			TransportChannelIdentity,
	rach-TransportFormatSet				TransportFormatSet					OPTIONAL,
	rach-TFCS							TFCS								OPTIONAL,
	prach-Partitioning					PRACH-Partitioning					OPTIONAL,
	persistenceScalingFactorList		PersistenceScalingFactorList		OPTIONAL,
	ac-To-ASC-MappingTable				AC-To-ASC-MappingTable				OPTIONAL,
	modeSpecificInfo					CHOICE {
		fdd									SEQUENCE {
			primaryCPICH-TX-Power				PrimaryCPICH-TX-Power		OPTIONAL,
			constantValue						ConstantValue				OPTIONAL,
			prach-PowerOffset					PRACH-PowerOffset			OPTIONAL,
			rach-TransmissionParameters			RACH-TransmissionParameters OPTIONAL,
			aich-Info							AICH-Info					OPTIONAL
		},
		tdd									NULL
	}
}

PRACH-SystemInformationList ::=		SEQUENCE (SIZE (1..maxPRACH)) OF
										PRACH-SystemInformation

PreambleRetransMax ::=				INTEGER (1..64)

PreambleScramblingCodeWordNumber ::=	INTEGER (0..15)

PreDefPhyChConfiguration ::=		SEQUENCE {
	ul-DPCH-InfoPredef					UL-DPCH-InfoPredef,
	dl-CommonInformationPredef			DL-CommonInformationPredef	OPTIONAL
}

PrimaryCCPCH-Info ::=				CHOICE {
	fdd									SEQUENCE {
		tx-DiversityIndicator				BOOLEAN
	},
	tdd									SEQUENCE {
		syncCase							CHOICE {
			syncCase1							SEQUENCE {
				timeslot							TimeslotNumber
			},
			syncCase2							SEQUENCE {
				timeslotSync2						TimeslotSync2
			}
```

```
        }                                                                   OPTIONAL,
        cellParametersID                CellParametersID                    OPTIONAL,
        blockSTTD-Indicator             BOOLEAN
    }
}

PrimaryCCPCH-InfoPost ::=           SEQUENCE {
    syncCase                            CHOICE {
        syncCase1                           SEQUENCE {
            timeslot                            TimeslotNumber
        },
        syncCase2                           SEQUENCE {
            timeslotSync2                       TimeslotSync2
        }
    },
    cellParametersID                    CellParametersID,
    blockSTTD-Indicator                 BOOLEAN
}

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

PrimaryCPICH-Info ::=               SEQUENCE {
    primaryScramblingCode               PrimaryScramblingCode
}

PrimaryCPICH-TX-Power ::=           INTEGER (-10..50)

PrimaryScramblingCode ::=           INTEGER (0..511)

PuncturingLimit ::=                 ENUMERATED {
                                        pl0-40, pl0-44, pl0-48, pl0-52, pl0-56,
                                        pl0-60, pl0-64, pl0-68, pl0-72, pl0-76,
                                        pl0-80, pl0-84, pl0-88, pl0-92, pl0-96, pl1 }

PUSCH-CapacityAllocationInfo ::=    SEQUENCE {
    pusch-Allocation                    CHOICE {
        pusch-AllocationPending             NULL,
        pusch-AllocationAssignment          SEQUENCE {
            pdsch-AllocationPeriodInfo          AllocationPeriodInfo,
            pusch-PowerControlInfo              UL-TargetSIR                OPTIONAL,
            tfcs-Identity                       TFCS-IdentityPlain          OPTIONAL,
            configuration                       CHOICE {
                old-Configuration                   SEQUENCE {
                    pusch-Identity                      PUSCH-Identity
                },
                new-Configuration                   SEQUENCE {
                    pusch-Info                          PUSCH-Info,
                    pusch-Identity                      PUSCH-Identity      OPTIONAL
                }
            }
        }
    }
}

PUSCH-Identity ::=                  INTEGER (1..hiPUSCHidentities)

PUSCH-Info ::=                      SEQUENCE {
    tfcs-Identity                       TFCS-IdentityPlain                  OPTIONAL,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    pusch-TimeslotsCodes                UplinkTimeslotsCodes                OPTIONAL
}

PUSCH-SysInfo ::=                   SEQUENCE {
    pusch-Identity                      PUSCH-Identity,
    pusch-Info                          PUSCH-Info,
    usch-TFS                            TransportFormatSet                  OPTIONAL,
    usch-TFCS                           TFCS                                OPTIONAL
}

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

PUSCH-SysInfoList-SFN ::=           SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pusch-SysInfo                           PUSCH-SysInfo,
    sfn-TimeInfo                            SFN-TimeInfo                    OPTIONAL
}

RACH-TransmissionParameters ::=     SEQUENCE {
    mmax                                INTEGER (1..32),
    nb01Min                             NB01,
    nb01Max                             NB01
}
```

```
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..maxTFCI-2-Combs)) 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)
}

RestrictedTrCH ::=                  SEQUENCE {
    restrictedDL-TrCH-Identity          TransportChannelIdentity,
    allowedTFIList                      AllowedTFI-List
}

RestrictedTrCH-InfoList ::=         SEQUENCE (SIZE(1..maxTrCH)) OF
                                        RestrictedTrCH

RL-AdditionInformation ::=          SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL,
    tfci-CombiningIndicator             BOOLEAN,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH                  OPTIONAL
}

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

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

```
                                    PrimaryCPICH-Info

RL-RemovalInformationList ::=       SEQUENCE (SIZE (1..maxRL-1)) OF
                                        PrimaryCPICH-Info

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-ChannelisationCodeList ::=   SEQUENCE (SIZE (1..16)) OF
                                        SCCPCH-ChannelisationCode

SCCPCH-InfoForFACH ::=              SEQUENCE {
    secondaryCCPCH-Info                 SecondaryCCPCH-Info,
    tfcs                                TFCS,
    fach-PCH-InformationList            FACH-PCH-InformationList,
    sib-ReferenceListFACH               SIB-ReferenceListFACH
}

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

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

ScramblingCodeChange ::=            ENUMERATED {
                                        codeChange, noCodeChange }

ScramblingCodeType ::=              ENUMERATED {
                                        shortSC,
                                        longSC }

SecondaryCCPCH-Info ::=             SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            pCPICH-UsageForChannelEst       PCPICH-UsageForChannelEst,
            secondaryCPICH-Info             SecondaryCPICH-Info             OPTIONAL,
            secondaryScramblingCode         SecondaryScramblingCode         OPTIONAL,
            sttd-Indicator                  BOOLEAN,
            sf-AndCodeNumber                SF256-AndCodeNumber,
            pilotSymbolExistence            BOOLEAN,
            tfci-Existence                  BOOLEAN,
            positionFixedOrFlexible         PositionFixedOrFlexible,
            timingOffset                    TimingOffset                    DEFAULT 0
        },
        tdd                             SEQUENCE {
            -- TABULAR: the offset is included in CommonTimeslotInfoSCCPCH
            commonTimeslotInfo              CommonTimeslotInfoSCCPCH,
            individualTimeslotInfo          IndividualTimeslotInfo,
            channelisationCode              SCCPCH-ChannelisationCodeList
        }
    }
}

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

SecondaryScramblingCode ::=         INTEGER (1..15)

SecondInterleavingMode ::=          ENUMERATED {
                                        frameRelated, timeslotRelated }

-- SF256-AndCodeNumber encodes both "Spreading factor" and "Code Number"
SF256-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)
}

-- SF512-AndCodeNumber encodes both "Spreading factor" and "Code Number"
SF512-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),
    sf512                               INTEGER (0..511)
}

-- SF512-AndPilot encodes both "Spreading factor" and "Number of bits for Pilot bits"
SF512-AndPilot ::=                  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 }

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

SFN-TimeInfo ::=                    SEQUENCE {
    activationTimeSFN                   INTEGER (0..4095),
    physChDuration                  DurationTimeInfo
}

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

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
}

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-CCode8 ::=                ENUMERATED {
                                        cc8-1, cc8-2, cc8-3, cc8-4,
                                        cc8-5, cc8-6, cc8-7, cc8-8 }

TDD-PRACH-CCode16 ::=               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-CCodeList ::=             CHOICE {
    sf8                                 SEQUENCE (SIZE (1..8)) OF
                                            TDD-PRACH-CCode8,
    sf16                                SEQUENCE (SIZE (1..8)) OF
                                            TDD-PRACH-CCode16
}

TFC-ControlDuration ::=             ENUMERATED {
                                        tfc-cd1, tfc-cd2, tfc-cd4, tfc-cd8,
                                        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 (15..270)

TGL ::=                             INTEGER (1..14)

TGMP ::=                            ENUMERATED {
                                        tdd-Measurement, fdd-Measurement,
                                        gsm-CarrierRSSIMeasurement,
                                        gsm-initialBSICIdentification, gsmBSICReconfirmation }

TGP-Sequence ::=                    SEQUENCE {
    tgpsi                               TGPSI,
    tgps-StatusFlag                     TGPS-StatusFlag,
    tgcfn                               TGCFN,
    tgps-ConfigurationParams            TGPS-ConfigurationParams            OPTIONAL
}

TGP-SequenceList ::=                SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-Sequence

TGP-SequenceShort ::=               SEQUENCE {
    tgpsi                               TGPSI,
    tgps-StatusFlag                     TGPS-StatusFlag,
    tgcfn                               TGCFN
}

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,
    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,
    deltaSIR1                           DeltaSIR,
    deltaSIRAfter1                      DeltaSIR,
    deltaSIR2                           DeltaSIR                            OPTIONAL,
    deltaSIRAfter2                      DeltaSIR                            OPTIONAL
}

TGPS-StatusFlag ::=                 ENUMERATED {
                                        tgpsActive, tgpsInactive }

TGPSI ::=                           INTEGER (1..maxTGPS)

TGSN ::=                            INTEGER (0..14)

TimeInfo ::=                        SEQUENCE {
    activationTime                      ActivationTime                      OPTIONAL,
    durationTimeInfo                    DurationTimeInfo                    OPTIONAL
}

TimeslotList ::=                    SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotNumber

TimeslotNumber ::=                      INTEGER (0..14)

TimeslotSync2 ::=               INTEGER (0..6)

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

TPC-CombinationIndex ::=            INTEGER (0..5)
```

```
TPC-StepSizeFDD ::=                 INTEGER (0..1)

TPC-StepSizeTDD ::=                 INTEGER (1..3)

TX-DiversityMode ::=                ENUMERATED {
                                        noDiversity,
                                        sttd,
                                        closedLoopMode1,
                                        closedLoopMode2 }

UARFCN ::=                      INTEGER (0..16383)

UCSM-Info ::=                       SEQUENCE {
    minimumSpreadingFactor              MinimumSpreadingFactor,
    nf-Max                              NF-Max,
    channelReqParamsForUCSM             ChannelReqParamsForUCSM
}

UL-CCTrCH ::=                       SEQUENCE {
    tfcs-Identity                       TFCS-IdentityPlain                  OPTIONAL,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes                OPTIONAL
}

UL-CCTrCHList ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        UL-CCTrCH

UL-CCTrChTPCList ::=                SEQUENCE (SIZE (0..maxCCTrCH)) OF
                                            TFCS-Identity

UL-ChannelRequirement ::=           CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    cpch-SetInfo                        CPCH-SetInfo
}

UL-ChannelRequirementWithCPCH-SetID ::= CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    cpch-SetInfo                        CPCH-SetInfo,
    cpch-SetID                          CPCH-SetID
}

UL-CompressedModeMethod ::=         ENUMERATED {
                                        sf-2,
                                        higherLayerScheduling }

UL-DL-Mode ::=                      CHOICE {
    ul                                  UL-CompressedModeMethod,
    dl                                  DL-CompressedModeMethod
}

UL-DPCCH-SlotFormat ::=             ENUMERATED {
                                        slf0, slf1, slf2 }

UL-DPCH-Info ::=                    SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo            OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            numberOfDPDCH                       NumberOfDPDCH               DEFAULT 1,
            spreadingFactor                     SpreadingFactor,
            tfci-Existence                      BOOLEAN,
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            -- The IE above is conditional based on history
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl     OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoPostFDD ::=             SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPostFDD,
            scramblingCodeType                  ScramblingCodeType,
            reducedScramblingCodeNumber         ReducedScramblingCodeNumber,
            spreadingFactor                     SpreadingFactor

}
```

```
UL-DPCH-InfoPostTDD ::=             SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPostTDD,
    ul-TimingAdvance                    UL-TimingAdvanceControl                 OPTIONAL,
    ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes
}

UL-DPCH-InfoPredef ::=              SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPredef,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            tfci-Existence                      BOOLEAN,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            commonTimeslotInfo                  CommonTimeslotInfo
        }
    }
}

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 {
        ul-TargetSIR                        UL-TargetSIR,
            ul-OL-PC-Signalling                 CHOICE {
                broadcast-UL-OL-PC-info             NULL,
                handoverGroup                       SEQUENCE {
                    individualTS-InterferenceList       IndividualTS-InterferenceList,
                    dpch-ConstantValue                  ConstantValue,
                    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }                                                               OPTIONAL
    }
}

UL-DPCH-PowerControlInfoPostFDD ::= SEQUENCE {
            powerControlAlgorithm               PowerControlAlgorithm
            -- TABULAR: TPC step size nested inside PowerControlAlgorithm
}

UL-DPCH-PowerControlInfoPostTDD ::= SEQUENCE {
    ul-TargetSIR                        UL-TargetSIR,
    ul-TimeslotInterference             UL-Interference
}

UL-DPCH-PowerControlInfoPredef ::=      CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble
    },
    tdd                                 SEQUENCE {
        dpch-ConstantValue                  ConstantValue
    }
}

UL-Interference ::=                 INTEGER (-110..-70)

UL-ScramblingCode ::=               INTEGER (0..16777215)

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

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

UL-TimingAdvanceControl ::=         CHOICE {
    disabled                            NULL,
    enabled                             SEQUENCE {
        ul-TimingAdvance                    UL-TimingAdvance                OPTIONAL,
        activationTime                      ActivationTime                  OPTIONAL
    }
}

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 }

UL-TS-ChannelisationCodeList ::=    SEQUENCE (SIZE (1..2)) OF
                                        UL-TS-ChannelisationCode

UplinkAdditionalTimeslots ::=       SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo                  IndividualTimeslotInfo,
            ul-TS-ChannelisationCodeList            UL-TS-ChannelisationCodeList
        }
    }
}

UplinkTimeslotsCodes ::=            SEQUENCE {
    dynamicSFusage                      BOOLEAN,
    firstIndividualTimeslotInfo         IndividualTimeslotInfo,
    ul-TS-ChannelisationCodeList        UL-TS-ChannelisationCodeList,
    moreTimeslots                       CHOICE {
        noMore                              NULL,
        additionalTimeslots                 CHOICE {
            consecutive                         SEQUENCE {
                numAdditionalTimeslots              INTEGER (1..maxTS-1)
            },
            timeslotList                        SEQUENCE (SIZE (1..maxTS-1)) OF
                                                    UplinkAdditionalTimeslots
        }
    }
}
```

3GPP TSG-RAN2 Meeting #19 ***R2-010716***
Sophia Antipolis, France, 19-23 February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.331**	**CR 672**	⌘ rev **r2** ⌘	Current version: **3.5.0** ⌘

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

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

Title: ⌘	Corrections on UE Positioning information		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘		***Date:*** ⌘	1 – 03 - 2001
Category: ⌘	**F**	***Release:*** ⌘	R99
	Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	- streamline of the IEs included in System Information Broadcast and Assistance Data delivery - clarification of some IEs imported from GSM - clarification of some IEs imported from GPS - move description text (no normative) to 25.305 - major editorial clean-up
Summary of change: ⌘	
Consequences if not approved: ⌘	unnecessary complexity in UE implementation

Clauses affected: ⌘	2, 8.1.1.1.2, 8.1.1.6.15, 8.1.1.6.15.1, 8.1.1.6.15.3, 8.1.1.6.15.4 (new), 10.2.48.8.18, 10.2.48.8.18.1, 10.2.48.8.18.2, 10.2.48.8.18.3, 10.2.48.8.18.4 (new), 10.3.6.8a (new), 10.3.7.86, 10.3.7.87, 10.3.7.88, 10.3.7.88a (new) , 10.3.7.89, 10.3.7.90, 10.3.7.90a (new), 10.3.7.91, 10.3.7.92, 10.3.7.93, 10.3.7.94, 10.3.7.95, 10.3.7.96, 10.3.7.97, 10.3.7.98, 10.3.7.99, 10.3.7.100, 10.3.7.102, 10.3.7.103, 10.3.7.104, 10.3.7.105, 10.3.7.106, 10.3.7.108, 10.3.7.109, 10.3.7.110, 10.3.7.111, 10.3.8, 10.3.8.a, 10.3.8.b, 10.3.8.c, 10.3.8.d, 10.3.8.e, 10.3.8.21, 10.3.8.22, 11, 13.4.32
Other specs affected: ⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications
Other comments: ⌘	

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

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

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

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

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

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

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

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

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

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

[10] 3GPP TS 25.402: "Synchronization in UTRAN, stage 2".

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

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

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

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

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

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

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

[18] 3GPP TS 25.305: "Stage 2 Functional Specification of ~~Location Services~~UE positioning in UTRAN".

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

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

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

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

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

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

[25] 3GPP TS 25.214: " Physical layer procedures (FDD)"

8.1.1.1.2 System information blocks

Table 8.1.1 specifies all system information blocks and their characteristics.

The *area scope column* in table 8.1.1 specifies the area where a system information block's value tag is valid. If the area scope is *cell*, the UE shall consider the system information block to be valid only in the cell in which it was read. If system information blocks have been previously stored for this cell, the UE shall check whether the value tag for the system information block in the entered cell is different compared to the stored value tag. If the area scope is *PLMN*, the UE shall check the value tag for the system information block when a new cell is selected. If the value tag for the system information block in the new cell is different compared to the value tag for the system information block stored in the UE, the UE shall re-read the system information block.

For System information block type 16, which may have multiple occurrences, each occurrence has its own independent value tag. The UE- shall re-read a particular occurrence if the value tag of this occurrence has changed compared to that stored in the UE.

The *UE mode/state column when block is valid* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block shall be regarded as valid by the UE. In other words, the indicated system information block becomes invalid upon change to a mode/state that is not included in this column.

The *UE mode/state column when block is read* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block shall be read by the UE.

NOTE 1 There are a number of system information blocks that include the same IEs while the UE mode/state in which the information is valid differs. This approach is intended to allows the use of different IE values in different UE mode/states.

NOTE 2 The requirements concerning when a UE shall read system information blocks are specified indirectly; these requirements may be derived from the procedure specifications that specify which IEs are required in the different UE modes/states in conjunction with the different performance requirements that are specified.

The *Scheduling information* column in Table 8.1.1 specifies the position and repetition period for the SIB.

The *modification of system information* column in Table 8.1.1 specifies the update mechanisms applicable for a certain system information block. For system information blocks with a value tag, the UE shall update the information according to subclause 8.1.1.7.1 or 8.1.1.7.2. For system information blocks with an expiration timer, the UE shall, when the timer expires, perform an update of the information according to subclause 8.1.1.7.4.

Table 8.1.1: Specification of system information block characteristics

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
Master information block	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	SIB_POS = 0 SIB_REP = 8 (FDD) SIB_REP = 8, 16, 32 (TDD) SIB_OFF=2	Value tag	
Scheduling block 1	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information" in MIB	Value tag	
Scheduling block 2	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information" in MIB	Value tag	
System information block type 1	PLMN	Idle mode CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle	Specified by the IE "Scheduling information"	Value tag	
System information block type 2	Cell	URA_PCH	URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 3	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 4	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If System information block type 4 is not broadcast in a cell, the connected mode UE shall read System information block type 3
System information block type 5	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 6	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Value tag	If system information block type 6 is not broadcast in a cell, the connected mode UE shall read System information block type 5. If some of the optional IEs are not included in System information block type 6, the UE shall read the corresponding IEs in System information block type 5
System information block type 7	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Expiration timer = MIN([320 ms],SIB_REP * ExpirationTimeFactor)	

System information block type 8	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 9	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 10	Cell	CELL_DCH	CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 11	Cell	Idle mode (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH)	Idle mode (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 12	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If some of the optional IEs are not included in System information block type 12, the UE shall read the corresponding IEs in System information block type 11.
System information block type 13	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.3	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 14	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = MIN([320 ms], SIB_REP * ExpirationTimeFactor)	This system information block is used in TDD mode only.
System information block type 15	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.3	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	

System information block type 15.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 16	PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences
System information block type 17	Cell	CELL_FACH, CELL_PCH, URA_PCH , CELL_DCH	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	This system information block is used in TDD mode only.

The UE shall acquire all system information blocks except system information block type 10 on BCH. System Information Block type 10 shall be acquired on the FACH and only by UEs with support for simultaneous reception of one SCCPCH and one DPCH. If System Information Block type 10 is not broadcast in a cell, the DRAC procedures do not apply in this cell. System Information Block type 10 is used in FDD mode only.

8.1.1.6.15 System Information Block type 15

If the UE is in idle or connected mode, and supports GPS location services and/or OTDOA location services it should store all relevant IEs included in this system information block. The UE shall:

- if the IE "~~UP~~ Cipher GPS Data Indicator" is included, and the UE has a full or reduced complexity GPS receiver functionality (the UE will know that the broadcast GPS data is ciphered in accordance with the Data Assistance Ciphering Algorithm detailed in [18]):
  store the parameters contained within this IE (see 10.3.7.86 for details), and use them to decipher the broadcast UP GPS information contained within the System Information Block types 15.1, 15.2 and 15.3;

- use IE "Reference Location" as a priori knowledge of the approximate location of the UE;

- if the IE "NODE B Clock Drift" is included:

  - use it as an estimate of the drift rate of the NODE B clock relative to GPS time;

- if the IE "NODE B Clock Drift" is not included:

  - assume the value 0;

- if SFN is included:

  - use it as the relationship between GPS time and air-interface timing of the NODE B transmission in the serving cell;

- use "Reference GPS TOW" as GPS Time of Week which is the start of the frame with SFN=0;

- ~~if the IE "UP OTDOA assistance for SIB" is included:~~
  ~~store the relevant information (refer to 10.3.7.104 for details).~~

8.1.1.6.15.1 System Information Block type 15.1

The UE should store all the relevant IEs included in this system information block . The UE shall:

- ~~interpret a value of "1" of "UTRAN Time Flag" to mean that UTRAN timing information value (SFN) is present, and "0" to mean that only the Reference GPS TOW field value is provided;~~

- ~~interpret a value of "1" of "NODE B Clock Drift Flag" to mean that NODE B Clock Drift information value is present, and "0" to mean that this IE value is not provided;~~

- ~~if the IE "NODE B Clock Drift" is included:~~

  - ~~use it as an estimate of the drift rate of the NODE B clock relative to GPS time;~~

- ~~if the IE "NODE B Clock Drift" is not included:~~

  - ~~assume the value 0;~~

- ~~use IE "Reference Location" as a priori knowledge of the approximate location of the UE;~~

- ~~if SFN is included:~~

  - ~~use it as the relationship between GPS time and air-interface timing of the NODE B transmission in the serving cell;~~

- ~~use "Reference GPS TOW" as GPS Time of Week which is the start of the frame with SFN=0;~~

- use "Status/Health" to indicate the status of the differential corrections;

- act on IE group "DGPS information" in a similar manner as specified in [13] except that the scale factors for PRC and RRC are different. In addition, the IE group DGPS information also include Delta PRC2 and Delta RRC2. Delta PRC2 is the difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2. Delta RRC2 is the difference in the pseudorange rate-of-change correction between the satellite's ephemeris identified by IODE and IODE-2. These two additional IEs can extend the life of the raw ephemeris data up to 6 hours.

8.1.1.6.15.2 System Information Block type 15.2

The UE should store all the relevant IEs included in this system information block . The UE shall:

- interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- interpret IE "SatID" as the satellite ID of the data from which this message was obtained;
- act on the rest of the IEs in a similar manner as specified in [12]. In addition, the UE can utilise these IEs for GPS time dissemination and sensitivity improvement.

8.1.1.6.15.3 System Information Block type 15.3

The UE should store all the relevant IEs included in this system information block . The UE shall:

- interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- interpret IE "SatMask" as the satellites that contain the pages being broadcast in this message;
- interpret IE "LSB TOW" as the least significant 8 bits of the TOW ([12]);
- ~~interpret IE "SFIO" as the least significant bit of the SubFrame (SF) ID for which the following word 3 through word 10 data applies. Zero indicates subframe ID = 4, and One indicates Subframe ID = 5;~~
- interpret IE "Data ID" as the Data ID field contained in the indicated subframe, word 3, most significant 2 bits, as defined by [12];
- ~~interpret IE "Page No" as the Page ID of the indicated subframe for which the following Word 3 through Word 10 data applies;~~
- act on the rest of the IEs ~~(Word 3 to Word 10)~~ in a similar manner as specified in [12]., ~~excluding non-information bits, "Data ID" and "SV ID" from Word 3 (16 bits left), 2 bit "t" from Word 10 (22 bits left). Word 4 through Word 9 have 24 bits left.~~ In addition, the UE can utilise these IEs including non-information bits for GPS time dissemination and sensitivity improvement.

8.1.1.6.15.X System Information Block type 15.4

If the UE is in idle or connected mode, and supports OTDOA location services the UE shall store all relevant IEs included in this system information block (refer to 10.3.7.104 for details).

10.2.48.8.18 System Information Block type 15

The system information block type 15 contains information useful ~~for UP~~ for UE-based or UE-assisted positioning methods. ~~In particular it allows the UE based method to perform localization without dedicated signalling. For the UE assisted methods the signalling is reduced.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~UP GPS SIBs Indicator~~	~~MP~~		~~Bitstring(3)~~	~~This IE is a bitmap indicating the presence of SIB15.1, SIB15.2 and SIB15.3, i.e.~~ ~~'000' means all absent~~ ~~'001' means SIB15.1 present~~ ~~'010' means SIB15.2 present~~ ~~...~~ ~~'111' means all present~~
~~UP Cipher~~ GPS Data ciphering info~~Data Indicator~~	OP		UP Cipher ~~GPS Data Indicator~~ info 10.3.7.86	If this IE is present then ~~This is included if~~ the SIB types 15.1, 15.2 & 15.3 are ciphered in accordance with the Data Assistance Ciphering Algorithm specified in [18]
Reference position	MP		Ellipsoid point with altitude and uncertainty ellipse 10.3.8.e	approximate position where the UE is located
GPS Reference Time	MP		UP GPS reference time 10.3.7.96	
~~UP OTDOA assistance for SIB~~	~~OP~~		~~UP OTDOA assistance for SIB 10.3.7.104~~	

10.2.48.8.18.1 System Information Block type 15.1

The system information block type 15.1 contains information useful for UP DGPS Corrections. The DGPS Corrections message contents are based on a Type-1 message of ~~version 2.2 of the RTCM-SC-104 recommendation for differential service~~DGPS specified in [13]. ~~This format is a standard of the navigation industry and is supported by all DGPS receivers.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~UTRAN Time Flag~~	~~MP~~		~~Bitstring(1)~~	
~~Node B Clock Drift Flag~~	~~MP~~		~~Bitstring(1)~~	
~~Node B Clock Drift~~	~~OP~~		~~Real(-0.1..0.1 by a proper step)~~	~~This IE provides an estimate of the drift rate of the Node B clock relative to GPS time. It has units of µsec/sec (ppm) and a range of ±0.1. This IE aids the UE in maintaining the relation between GPS and cell timing over a period of time. A positive value for Node B Clock Drift indicates that the Node B clock is running at a greater frequency than desired.~~
~~Reference UE Location~~	~~MP~~		~~As defined in TS23.032Ellipsoid point 10.3.8.a~~	~~Provides a priori knowledge of the approximate UE positionlocation of the UE~~
~~GPS TOW msec~~	~~MP~~		~~Integer(0..6.048*10^8-1)~~	~~GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit). GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec~~
~~GPS TOW rem usec~~	~~MP~~		~~Integer(0..999)~~	~~GPS Time of Week in microseconds MOD 1000.~~
~~SFN~~	~~OP~~		~~Integer(0..4095)~~	~~The SFN that occurs at the Reference GPS TOW time~~
~~Node B Clock Drift~~	~~OP~~		~~Real(-0.1..0.1 by step of 0.0125)~~	~~µsec/sec (ppm)~~
DGPS corrections	MP		UP GPS DGPS corrections 10.3.7.91	
~~Reference GPS TOW~~	~~MP~~		~~Integer(0..6.047*10^11)~~	~~GPS Time of Week with scaling factor of 1 usec. This field time-stamps the start of the frame with SFN=0.~~
~~Status/Health~~	~~MP~~		~~Enumerated(UDRE scale 1.0, UDRE scale 0.75, UDRE scale 0.5, UDRE scale 0.3, UDRE scale 0.2, UDRE scale 0.1, no data, invalid data)~~	~~This field indicates the status of the differential corrections.~~
~~DPGS information~~	~~CV-*Status*~~	~~1..<maxSat>~~		~~The following fields contain the DPGS corrections. If the Cipher information is included these fields are ciphered.~~

~~>SatID~~	~~MP~~		~~Enumerated (0…63)~~	~~The satellite ID number.~~
~~>IODE~~	~~MP~~		~~Integer(0..255)~~	~~This IE is the sequence number for the ephemeris for the particular satellite. The MS can use this IE to determine if new ephemeris is used for calculating the corrections that are provided in the broadcast message. This eight-bit IE is incremented for each new set of ephemeris for the satellite and may occupy the numerical range of [0, 239] during normal operations.~~
~~>UDRE~~	~~MP~~		~~Enumerated(UDRE ≤ 1.0 m, 1.0m < UDRE ≤ 4.0m, 4.0m < UDRE ≤ 8.0m, 8.0m < UDRE)~~	~~User Differential Range Error. This field provides an estimate of the uncertainty (1-σ) in the corrections for the particular satellite. The value in this field shall be multiplied by the UDRE Scale Factor in the Status field to determine the final UDRE estimate for the particular satellite.~~
~~>PRC~~	~~MP~~		~~Integer(-2047..2047)~~	~~Scaling factor 0.32 meters (different from [13])~~
~~>RRC~~	~~MP~~		~~Integer(-127..127)~~	~~Scaling factor 0.032 meters/sec (different from [13])~~
~~>Delta PRC2~~	~~MP~~		~~Integer(-127..127)~~	~~The difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2.~~
~~>Delta RRC2~~	~~MP~~		~~Integer(-7..7)~~	~~The difference in the pseudorange rate-of-change correction between the satellite's ephemeris identified by IODE and IODE-2.~~

~~**Condition**~~	~~**Explanation**~~
~~*Status/Health*~~	~~This IE is mandatory if "status" is not equal to "no data" or "invalid data", otherwise the IE is not needed~~

10.2.48.8.18.2 System Information Block type 15.2

The system information block type 15.2 contains information useful for GPS ~~Reference Time and~~ Navigation Model.~~ephemeris and clock corrections,~~ ~~of a particular satellite.~~ These IE fields are based on information extracted from the subframes 1 to 3 of the GPS navigation message [12].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Transmission TOW	MP		Integer (0..604799)~~Enumerated(0..1048575)~~	The approximate GPS time-of-week when the message is broadcast in seconds
~~SatID~~	~~MP~~		~~Enumerated(0..63)~~	~~Satellite ID~~
~~TLM Message~~	~~MP~~		~~Bit string(14)~~	
~~TLM Revd (C)~~	~~MP~~		~~Bit string(2)~~	
~~HOW~~	~~MP~~		~~Bit string(22)~~	
~~WN~~	~~MP~~		~~Bit string(10)~~	
~~C/A or P on L2~~	~~MP~~		~~Bit string(2)~~	
~~URA Index~~	~~MP~~		~~Bit string(4)~~	
~~SV Health~~	~~MP~~		~~Bit string(6)~~	
~~IODC~~	~~MP~~		~~Bit string(10 (1))~~	
~~L2 P Data Flag~~	~~MP~~		~~Bit string(1)~~	
~~SF 1 Reserved~~	~~MP~~		~~Bit string(87)~~	
~~T_{GD}~~	~~MP~~		~~Bit string(8)~~	
~~t_{oc}~~	~~MP~~		~~Bit string(16 (1))~~	
~~af_2~~	~~MP~~		~~Bit string(8)~~	
~~af_1~~	~~MP~~		~~Bit string(16)~~	
~~af_0~~	~~MP~~		~~Bit string(22)~~	
~~C_{rs}~~	~~MP~~		~~Bit string(16)~~	
~~Δn~~	~~MP~~		~~Bit string(16)~~	
~~M_0~~	~~MP~~		~~Bit string(32)~~	
~~C_{uc}~~	~~MP~~		~~Bit string(16)~~	
~~e~~	~~MP~~		~~Bit string(32 (1))~~	
~~C_{us}~~	~~MP~~		~~Bit string(16)~~	
~~$(A)^{1/2}$~~	~~MP~~		~~Bit string(32 (1))~~	
~~t_{oe}~~	~~MP~~		~~Bit string(16 (1))~~	
~~Fit Interval Flag~~	~~MP~~		~~Bit string(1)~~	
~~AODO~~	~~MP~~		~~Bit string(5)~~	
~~C_{ic}~~	~~MP~~		~~Bit string(16)~~	
~~$OMEGA_0$~~	~~MP~~		~~Bit string(32)~~	
~~C_{is}~~	~~MP~~		~~Bit string(16)~~	
~~i_0~~	~~MP~~		~~Bit string(32)~~	
~~C_{rc}~~	~~MP~~		~~Bit string(16)~~	
~~ω~~	~~MP~~		~~Bit string(32)~~	
~~OMEGAdot~~	~~MP~~		~~Bit string(24)~~	
~~Idot~~	~~MP~~		~~Bit string(14)~~	
~~Spare/zero fill~~	~~MP~~		~~Bit string(20)~~	
~~Reference position~~	~~MP~~		~~Ellipsoid point with altitude and uncertainty ellipse 10.3.8.e~~	~~approximate position where the UE is located~~
~~GPS Reference Time~~	~~MP~~		~~UP GPS reference time 10.3.7.96~~	
SatID	MP		Enumerated(0..63)	Satellite ID
GPS Clock and Ephemeris parameters	MP		UP GPS Clock and Ephemeris parameters 10.3.7.XX	

~~GPS Navigation Model~~	~~MP~~		~~UP GPS navigation model 10.3.7.94~~	

10.2.48.8.18.3 System Information Block type 15.3

The system information block type 15.3 contains information useful for ionospheric delay, UTC offset, and Almanac. These IEs contain information ~~fields are~~ extracted from the subframes 4 and 5 of the GPS navigation message~~, excluding the parity bits and other redundant bits~~ [12].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Transmission TOW	MP		Integer (0..604799)~~Enumerated(0..1048575)~~	The approximate GPS time-of-week when the message is broadcast in seconds
GPS Almanac and Satellite Health	OP		UP GPS almanac 10.3.7.89	
GPS ionospheric model	OP		UP GPS ionospheric model 10.3.7.92	
GPS UTC model	OP		UP GPS UTC model 10.3.7.97	
SatMask	CV-*Almanac*~~MP~~		Bitstring(1..32)	indicates the satellites that contain the pages being broadcast in this data set
LSB TOW	CV-*Almanac*~~MP~~		Bit string(8)	
~~GPS Info~~	~~MP~~	~~1 to <Max_Dat_rep>~~		
~~>SFIO 0~~	~~MP~~		~~Bit string(1)~~	~~Each repetition corresponds to a different page no. as described in the table below~~
~~>Data ID~~	~~MP~~		~~Bit string(2)~~	
~~>Page No.~~	~~MP~~		~~Bit string(6)~~	
~~>Word 3~~	~~MP~~		~~Bit string(16)~~	
~~>Word 4~~	~~MP~~		~~Bit string(24)~~	
~~>Word 5~~	~~MP~~		~~Bit string(24)~~	
~~>Word 6~~	~~MP~~		~~Bit string(24)~~	
~~>Word 7~~	~~MP~~		~~Bit string(24)~~	
~~>Word 8~~	~~MP~~		~~Bit string(24)~~	
~~>Word 9~~	~~MP~~		~~Bit string(24)~~	
~~>Word 10~~	~~MP~~		~~Bit string(22)~~	
~~Spare/zero fill~~	~~MP~~		~~Bit string(5)~~	

~~**Mapping of Almanac, Health, Iono, and UTC Data to Subframe Number and Page Number**~~

~~**Data Type**~~	~~**Subframe**~~	~~**Page(s)**~~
~~Almanac Data (SV1 – 24)~~	~~5~~	~~1 - 24~~
~~Almanac Data (SV25 – 32)~~	~~4~~	~~2, 3, 4, 5, 7, 8, 9, 10~~
~~SV Health (SV1 – 24)~~	~~5~~	~~25~~
~~SV Health (SV25 – 32)~~	~~4~~	~~25~~
~~Iono/UTC Corrections~~	~~4~~	~~18~~

~~**Multi Bound**~~	~~**Explanation**~~
~~*Max_Dat_rep*~~	~~Maximum number of repeats=3~~

Condition	**Explanation**
Almanac	This IE is present if the IE "GPS Almanac and Satellite Health" is present

10.2.48.8.18.XX System Information Block type 15.4

The system information block type 15.4 contains information useful for OTDOA based UE Positioning method.

Information Element/Group name	**Need**	**Multi**	**Type and Reference**	**Semantics description**
~~UP~~ OTDOA Data ciphering info	OP		UP Ciphering info 10.3.7.86	If this IE is present then the IE "~~UP~~ OTDOA Assistance Data" is ciphered in accordance with the Data Assistance Ciphering Algorithm specified in [18]
~~UP~~ OTDOA assistance data	MP~~OP~~		UP OTDOA assistance data 10.3.7.103	

10.3.6.XX Cell and Channel Identity info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Burst type	MP		Enumerated (Type1, Type2)	Identifies the channel in combination with the Offset
Midamble Shift	MP		Integer (1…16)	
Basic Midamble Number	MP		Integer (0…127)	Identifies the cell

10.3.7.86 UP Ciphering info ~~GPS Data Indicator~~

~~The UP Cipher GPS Data Indicator~~ This IE contains information for the ciphering of UP assistance data broadcast in System Information. ~~SIB types 15.1, 15.2 and 15.3~~.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~Ciphering parameters~~	~~OP~~			
~~>~~Ciphering Key Flag	MP		Bitstring(1)	See note 1
~~>~~Ciphering Serial Number	MP		Integer(0..65535)	The serial number used in the DES ciphering algorithm

NOTE 1: The UE always receives two (2) cipher keys during the location update procedure. One of the keys is time-stamped to be current one and the other is time-stamped to be the next one. Thus, the UE always has two cipher keys in memory. The Cipher Key Change Indicator in this broadcast message instructs the UE whether to use current or next cipher key for deciphering the received broadcast message. The UE shall interpret this IE as follows:

- **Ciphering Key Flag**(previous message) = **Ciphering Key Flag**(this message) => Deciphering Key not changed
- **Ciphering Key Flag**(previous message) <> **Ciphering Key Flag**(this message) => Deciphering Key changed

10.3.7.87 UP Error

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Error reason	MP		Enumerated(ER1, ER2, ER3, ER4, ER5, ER6, ER7)~~There were not enough cells to be received when performing mobile based OTDOA-IPDL. There were not enough GPS satellites to be received, when performing UE-based GPS location. Location calculation assistance data missing. Requested method not supported. Undefined error. Location request denied by the user. Location request not processed by the user and timeout.~~	Note 1
GPS Additional Assistance Data Request	OP		~~structure and encoding as for the GPS Assistance Data IE in GSM 09.31 excluding the IEI and length octets~~ UP GPS Additional Assistance Data Request 10.3.7.88a	~~This field is optional. Its presence indicates that the target UE will retain assistance data already sent by the SRNC. The SRNC may send further assistance data for any new location attempt but need not resend previous assistance data. The field may contain the following: GPS Assistance Data necessary additional GPS assistance data~~

NOTE 1: The following table gives the mapping of the IE "Error reason"

Value	Indication
ER1	There were not enough cells to be received when performing mobile based OTDOA-IPDL.
ER2	There were not enough GPS satellites to be received, when performing UE-based GPS location.
ER3	Location calculation assistance data missing.
ER4	Requested method not supported.
ER5	Undefined error.
ER6	Location request denied by the user.
ER7	Location request not processed by the user and timeout

10.3.7.88 UP GPS acquisition assistance

This IE ~~The Acquisition Assistance field of the GPS Assistance Data Information Element~~ contains parameters that enable fast acquisition of the GPS signals in UE-assisted ~~network-based~~ GPS positioning. ~~Essentially, these parameters describe the range and derivatives from respective satellites to the Reference Location at the Reference Time.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE Reference Time				
>UTRAN reference time				GPS Time of Week counted in microseconds, given as GPS TOW in milliseconds and GPS TOW remainder in microseconds, UTRAN reference time = 1000 * GPS TOW msec + GPS TOW rem usec
>>GPS TOW msec	MP		Integer(0..6.048*10^8-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit)
>>GPS TOW rem usec	MP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
>>SFN	MP		Integer(0..4095)	
>GPS reference time only				
>>GPS TOW msec	MP		Integer(0..6.048*10^8-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit).
Satellite information	MP	1 to <maxSat>		
>SatID	MP		Integer~~Enumerated~~(0..63)	~~Identifies the satellites~~
>Doppler (0th order term)	MP		Real(-5.120..5.1175 by step of 2.5)~~Integer(-2048..2047)~~	Hz~~, scaling factor 2.5~~
>Extra Doppler	OP			
>>Doppler (1st order term)	MP		Real (-1..0.5 by step of 0.023)~~Integer(-42..21)~~	Scaling factor 1/42
>>Doppler Uncertainty	MP		Enumerated ~~Real~~(12.5,25,50,100,200)	Hz
>Code Phase	MP		Integer(0..1022)	Chips, specifies the centre of the search window
>Integer Code Phase	MP		Integer(0..19)	1023 chip segments
>GPS Bit number	MP		Integer(0..3)	Specifies GPS bit number (20 1023 chip segments)
>Code Phase Search Window	MP		Integer(1023,1,2,3,4,6,8,12,16,24,32,48,64,96,128,192)	Specifies the width of the search window.
>Azimuth and Elevation	OP			
>>Azimuth	MP		Real~~Integer~~(0..348.75 by step of 11.25~~31~~)	Degrees~~, scale factor 11.25~~
>>Elevation	MP		Real~~Integer~~(0..78.75 by step of 11.25)	Degrees~~, scale factor 11.25~~

CHOICE *Reference time*	Condition under which the given *reference time* is chosen
UTRAN reference time	The reference time is relating GPS time to UTRAN time (SFN)
GPS reference time only	The time gives the time for which the location estimate is valid

10.3.7.88a UP GPS Additional Assistance Data Request

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Almanac	MP		Boolean	TRUE means requested
UTC Model	MP		Boolean	TRUE means requested
Ionospheric model	MP		Boolean	TRUE means requested
Navigation Model	MP		Boolean	TRUE means requested
DGPS Corrections	MP		Boolean	TRUE means requested
Reference Location	MP		Boolean	TRUE means requested
Reference Time	MP		Boolean	TRUE means requested
Acquisition Assistance	MP		Boolean	TRUE means requested
Real-Time Integrity	MP		Boolean	TRUE means requested
Navigation Model Additional data	CV-*Navigation Model*			this IE is present only if "Navigation Model" is set to TRUE otherwise it is absent
>GPS Week	MP		Integer (0..1023)	
>GPS_Toe	MP		Integer (0..167)	GPS time of ephemeris in hours of the latest ephemeris set contained by the UE
~~NSAT~~	~~MP~~		~~Integer (0..15)~~	
>T-Toe limit	MP		Integer (0..10)	ephemeris age tolerance of the UE to UTRAN~~n~~ in hours
>Satellites list related data	MP	0~~1~~ to <maxSat~~NSAT~~>-1		
>>SatID	MP		Integer (0..63)	
>>IODE	MP		Integer (0..239)	Issue of Data Ephemeris for SatID

10.3.7.89 UP GPS almanac

This IE contains a reduced-precision subset of the clock and ephemeris parameters.~~These fields specify the coarse, long-term model of the satellite positions and clocks. With one exception (δi), these parameters are a subset of the ephemeris and clock correction parameters in the Navigation Model, although with reduced resolution and accuracy. The almanac model is useful for receiver tasks that require coarse accuracy, such as determining satellite visibility. The model is valid for up to one year, typically. Since it is a long-term model, the field should be provided for all satellites in the GPS constellation.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
WN_a	MP		Bit string(8)	
Satellite information	MP	1 to <maxSat>		
>DataID	MP		Bitstring(2)	See [12]
>SatID	MP		Enumerated(0..63)	Satellite ID
>e	MP		Bit string(16)	Eccentricity [12]
>t_{oa}	MP		Bit string(8)	Reference Time Ephemeris [12]
>δi	MP		Bit string(16)	
>OMEGADOT	MP		Bit string(16)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles/sec) [12]
>SV Health	MP		Bit string(8)	
>$A^{1/2}$	MP		Bit string(24)	Semi-Major Axis $(meters)^{1/2}$ [12]
>$OMEGA_0$	MP		Bit string(24)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles) [12]
>M_0	MP		Bit string(24)	Mean Anomaly at Reference Time (semi-circles) [12]
>ω	MP		Bit string(24)	Argument of Perigee (semi-circles) [12]
>af_0	MP		Bit string(11)	apparent clock correction [12]
>af_1	MP		Bit string(11)	apparent clock correction [12]
SV Global Health	OP		Bit string(364~~192~~)	This enables GPS time recovery and possibly extended GPS correlation intervals. It is specified in page 25 of subframes 4 and 5 [12]

10.3.7.90 UP GPS assistance data

This IE contains GPS assistance data.~~The GPS Assistance Data element contains a single GPS assistance message that supports both UE-assisted and UE-based GPS methods.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UP GPS reference time	OP		UP GPS reference time 10.3.7.96	
UP GPS reference UE position~~location~~	OP		~~Ellipsoid point with altitude 10.3.8.ddefined in 23.032~~ Ellipsoid point with altitude and uncertainty ellipse~~oid~~ 10.3.8.e	~~The Reference Location field contains a 3-D location without uncertainty specified as per 23.032. The purpose of this field is to provide the UE with a~~ A priori knowledge of ~~its~~ UE 3-D position~~location in order to improve GPS receiver performance.~~
UP GPS DGPS corrections	OP		UP GPS DGPS corrections 10.3.7.91	
UP GPS navigation model	OP		UP GPS navigation model 10.3.7.94	
UP GPS ionospheric model	OP		UP GPS ionospheric model 10.3.7.92	
UP GPS UTC model	OP		UP GPS UTC model 10.3.7.97	
UP GPS almanac	OP		UP GPS almanac 10.3.7.89	
UP GPS acquisition assistance	OP		UP GPS acquisition assistance 10.3.7.88	
UP GPS real-time integrity	OP		UP GPS real-time integrity 10.3.7.95	

10.3.7.91 UP GPS DGPS corrections

This IE contains~~These fields specify the~~ DGPS corrections to be used by the UE.

~~Information Element/Group name~~	~~Need~~	~~Multi~~	~~Type and Reference~~	~~Semantics description~~
~~GPS TOW~~	~~MP~~		~~Integer(0..604799)~~	~~Seconds. This field indicates the baseline time for which the corrections are valid.~~
~~Status/Health~~	~~MP~~		~~Enumerated(UDRE scale 1.0, UDRE scale 0.75, UDRE scale 0.5, UDRE scale 0.3, UDRE scale 0.2, UDRE scale 0.1, no data, invalid data)~~	~~This field indicates the status of the differential corrections~~
~~Satellite information~~	~~MP~~	~~1 to <maxSat>~~		
~~>SatID~~	~~MP~~		~~Enumerated(0..63)~~	~~Satellite ID~~
~~>IODE~~	~~MP~~		~~Bit string(8)~~	~~This IE is the sequence number for the ephemeris for the particular satellite. The UE can use this IE to determine if new ephemeris is used for calculating the corrections that are provided in the broadcast message. This eight-bit IE is incremented for each new set of ephemeris for the satellite and may occupy the numerical range of [0, 239] during normal operations. See [13] for details~~
~~>UDRE~~	~~MP~~		~~Enumerated(UDRE ≤ 1.0 m, 1.0m < UDRE ≤ 4.0m, 4.0m < UDRE ≤ 8.0m, 8.0m < UDRE)~~	~~User Differential Range Error. This field provides an estimate of the uncertainty (1-σ) in the corrections for the particular satellite. The value in this field shall be multiplied by the UDRE Scale Factor in the common Corrections Status/Health field to determine the final UDRE estimate for the particular satellite. See [13] for details~~
~~>PRC~~	~~MP~~		~~Integer(-2047..2047)~~	~~Scaling factor 0.32 meters See (different from [13])~~
~~>RRC~~	~~MP~~		~~Integer(-127.. 127)~~	~~Scaling factor 0.032 meters/sec (different from [13])~~
~~>Delta PRC2~~	~~MP~~		~~Integer(-127..127)~~	~~Meters. The difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2.~~

~~>Delta RRC2~~	~~MP~~		~~Integer(-7..7)~~	~~Scaling factor 0.032 meters/sec. The difference in the rate of the change of the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris two issues ago IODE –2.~~
~~>Delta PRC3~~	~~MP~~		~~Integer(-127..127)~~	~~Meters. The difference in the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris three issues ago IODE –3.~~
~~>Delta RRC3~~	~~MP~~		~~Integer(-7..7)~~	~~Scaling factor 0.032 meters/sec. The difference in the rate of the change of the pseudorange correction between the satellite's ephemeris identified by IODE and the previous ephemeris three issues ago IODE –3.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS TOW sec	MP		Integer(0..604799)	seconds GPS time-of-week when the DGPS corrections were calculated
Status/Health	MP		Enumerated(UDRE scale 1.0, UDRE scale 0.75, UDRE scale 0.5, UDRE scale 0.3, UDRE scale 0.2, UDRE scale 0.1, no data, invalid data)	
DPGS information	CV-*Status/Health*	1 to <maxSat>		If the Cipher information is included these fields are ciphered.
>SatID	MP		Enumerated (0…63)	
>IODE	MP		Integer(0..239)	
>UDRE	MP		Enumerated(UDRE ≤ 1.0 m, 1.0m < UDRE ≤ 4.0m, 4.0m < UDRE ≤ 8.0m, 8.0m < UDRE)	The value in this field shall be multiplied by the UDRE Scale Factor in the IE Status/Health to determine the final UDRE estimate for the particular satellite.
>PRC	MP		Real(-655.34..655.34 by step of 0.32)	meters (different from [13])
>RRC	MP		Real(-4.064..4.064 by step of 0.032)	meters/sec (different from [13])
>Delta PRC2	MP		Integer(-127..127)	meters
>Delta RRC2	MP		Real(-0.224..0.224 by step of 0.032)	meters/sec
>Delta PRC3	CV-*DCCH*		Integer(-127..127)	meters
>Delta RRC3	CV-*DCCH*		Real(-0.224..0.224 by step of 0.032)	meters/sec

Condition	Explanation
Status/Health	This IE is mandatory if "status" is not equal to "no data" or "invalid data", otherwise the IE is not needed
DCCH	This IE is mandatory present if the IE " UP GPS DGPS corrections" ~~it~~ is included in the point-to-point message otherwise it is optional if the IE "UP GPS DGPS corrections" is included in the broadcast message

10.3.7.92 UP GPS ionospheric model

The IE ~~Ionospheric Model~~ contains fields needed to model the propagation delays of the GPS signals through the ionosphere.~~. Proper use of these fields allows a single-frequency GPS receiver to remove approximately 50% of the ionospheric delay from the range measurements. The Ionospheric Model is valid for the entire constellation and changes slowly relative to the Navigation Model.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
α_0	MP		Bit string(8)	Note 1
α_1	MP		Bit string(8)	Note 1
α_2	MP		Bit string(8)	Note 1
α_3	MP		Bit string(8)	Note 1
β_0	MP		Bit string(8)	Note 2
β_1	MP		Bit string(8)	Note 2
β_2	MP		Bit string(8)	Note 2
β_3	MP		Bit string(8)	Note 2

NOTE 1: The parameters αn are the coefficients of a cubic equation representing the amplitude of the vertical delay [12].

NOTE 2: The parameters βn are the coefficients of a cubic equation representing the period of the ionospheric model [12].

10.3.7.93 UP GPS measured~~ment~~ results

~~The purpose of the GPS Measurement Information element is to provide GPS measurement information from the UE to the SRNC. This information includes the measurements of code phase and Doppler, which enables the network-based GPS method where the position is computed in the SRNC.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Reference SFN	OP		Integer(0..4095)	The SFN for which the location is valid
GPS TOW msec	MP		Integer(0..6.048*10^8-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit). This time is the GPS TOW measured by the UE. If the Reference SFN field is present it is the ms flank closest to the beginning of that frame. GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
GPS TOW rem usec	CV-capability and request		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
Measurement Parameters	MP	1 to <maxSat>		
>Satellite ID	MP		Enumerated(0..63)	
>C/N_0	MP		Integer(0..63)	the estimate of the carrier-to-noise ratio of the received signal from the particular satellite used in the measurement. It is given in whole dBs. Typical levels observed by UE-based GPS units will be in the range of 20 – 50 dB.
>Doppler	MP		Integer(-32768..32768)	Hz, scale factor 0.2.
>Whole GPS Chips	MP		Integer(0..1023)	Unit in GPS chips
>Fractional GPS Chips	MP		Integer(0..(2^{10}-1))	Scale factor 2^{-10}
>Multipath Indicator	MP		Enumerated(NM, low, medium, high)	See note 1
>Pseudorange RMS Error	MP		Enumerated(range index 0..range index 63)	See note 2

Condition	Explanation
Capability and request	This field is included only if the UE has this capability *and* if it was requested in the UP reporting quantity

NOTE 1: The following table gives the mapping of the multipath indicator field.

Value	Multipath Indication
NM	Not measured
Low	MP error < 5m
Medium	5m < MP error < 43m
High	MP error > 43m

NOTE 2: The following table gives the bitmapping of the Pseudorange RMS Error field.

Range Index	Mantissa	Exponent	Floating-Point value, x_i	Pseudorange value, P
0	000	000	0.5	P < 0.5
1	001	000	0.5625	0.5 <= P < 0.5625
I	X	Y	$0.5 * (1 + x/8) * 2^y$	x_{i-1} <= P < x_i
62	110	111	112	104 <= P < 112
63	111	111	--	112 <= P

10.3.7.94 UP GPS navigation model

This IE contain information required to manage the transfer of precise navigation data to the GPS-capable UE.~~. This information includes control bit fields as well as satellite ephemeris and clock corrections.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~N_SAT~~	~~MP~~		~~Integer(1..16)~~	~~The number of satellites included in this IE~~
Satellite information	MP	1 to <maxSat>		
>SatID	MP		Enumerated(0..63)	Satellite ID
>Satellite Status	MP		Enumerated(NS_NN, ES_SN, ES_NN, REVD)	See note 1
>Clock and Ephemeris parameters	CV-*Satellite status*		UP GPS Clock and Ephemeris parameters 10.3.7.XX	
>~~>C/A or P on L2~~	~~MP~~		~~Bit string(2)~~	~~Code(s) on L2 Channel [12]Standard formats as defined in [12]~~
>~~>URA Index~~	~~MP~~		~~Bit string(4)~~	~~User Range Accuracy [12]~~
>~~>SV Health~~	~~MP~~		~~Bit string(6)~~	~~[12]~~
>~~>IODC~~	~~MP~~		~~Bit string(10 (1))~~	~~Issue of Data, Clock [12]~~
>~~>L2 P Data Flag~~	~~MP~~		~~Bit string(1)~~	~~[12]~~
>~~>SF 1 Reserved~~	~~MP~~		~~Bit string(87)~~	~~[12]~~
>~~>T_{GD}~~	~~MP~~		~~Bit string(8)~~	~~Estimated group delay differential [12]~~
>~~>t_{oc}~~	~~MP~~		~~Bit string(16 (1))~~	~~apparent clock correction [12]~~
>~~>af_2~~	~~MP~~		~~Bit string(8)~~	~~apparent clock correction [12]~~
>~~>af_1~~	~~MP~~		~~Bit string(16)~~	~~apparent clock correction [12]~~
>~~>af_0~~	~~MP~~		~~Bit string(22)~~	~~apparent clock correction [12]~~
>~~>C_{rs}~~	~~MP~~		~~Bit string(16)~~	~~Amplitude of the Sine Harmonic Correction Term to the Orbit Radius (meters) [12]~~
>~~>Δn~~	~~MP~~		~~Bit string(16)~~	~~Mean Motion Difference From Computed Value (semi-circles/sec) [12]~~
>~~>M_0~~	~~MP~~		~~Bit string(32)~~	~~Mean Anomaly at Reference Time (semi-circles) [12]~~
>~~>C_{uc}~~	~~MP~~		~~Bit string(16)~~	~~Amplitude of the Cosine Harmonic Correction Term To The Argument Of Latitude (radians) [12]~~
>~~>e~~	~~MP~~		~~Bit string(32 (1))~~	~~e~~
>~~>C_{us}~~	~~MP~~		~~Bit string(16)~~	~~Amplitude of the Sine Harmonic Correction Term To The Argument Of Latitude (radians) [12]~~
>~~>$(A)^{1/2}$~~	~~MP~~		~~Bit string(32 (1))~~	~~Semi-Major Axis (meters)$^{1/2}$ [12]~~
>~~>t_{oe}~~	~~MP~~		~~Bit string(16 (1))~~	~~Reference Time Ephemeris [12]~~
>~~>Fit Interval Flag~~	~~MP~~		~~Bit string(1)~~	~~[12]~~
>~~>AODO~~	~~MP~~		~~Bit string(5)~~	~~Age Of Data Offset [12]~~
>~~>C_{ic}~~	~~MP~~		~~Bit string(16)~~	~~Amplitude of the Cosine Harmonic Correction Term To The Angle Of Inclination (radians) [12]~~
>~~>$OMEGA_0$~~	~~MP~~		~~Bit string(32)~~	~~Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles) [12]~~

~~>>C_{is}~~	~~MP~~		~~Bit string(16)~~	~~Amplitude of the Sine Harmonic Correction Term To The Angle Of Inclination (radians) [12]~~
~~>>i_0~~	~~MP~~		~~Bit string(32)~~	~~Inclination Angle at Reference Time (semi-circles) [12]~~
~~>>C_{rc}~~	~~MP~~		~~Bit string(16)~~	~~Amplitude of the Cosine Harmonic Correction Term to the Orbit Radius (meters) [12]~~
~~>>ω~~	~~MP~~		~~Bit string(32)~~	~~Argument of Perigee (semi-circles) [12]~~
~~>>OMEGAdot~~	~~MP~~		~~Bit string(24)~~	~~Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles/sec) [12]~~
~~>>Idot~~	~~MP~~		~~Bit string(14)~~	~~Rate of Inclination Angle (semi-circles/sec) [12]~~

NOTE 1: The UE shall interpret enumerated symbols as follows.

Value~~Symbol~~	**~~Interpretation~~Indication**
NS_NN	New satellite, new Navigation Model
ES_SN	Existing satellite, same Navigation Model
ES_NN	Existing satellite, new Navigation Model
REVD	Reserved

Condition	Explanation
Satellite status	~~Group Included~~The IE is present unless IE "Satellite status" is ES_SN

10.3.7.95 UP GPS real-time integrity

This IE cContains parameters that describe the real-time status of the GPS constellation. ~~Primarily intended for non-differential applications, the real-time integrity of the satellite constellation is of importance as there is no differential correction data by which the mobile can determine the soundness of each satellite signal. The Real-Time GPS Satellite Integrity data communicates the health of the constellation to the mobile via a list of bad satellites. The satellites identified in this IE should not be used for position fixes at the moment.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Satellite information	OP	1 to <maxSat>		~~N_BAD_SAT=the number of bad satellites included in this IE~~
>BadSatID	MP		Enumerated(0..63)	~~Satellite ID~~

10.3.7.96 UP GPS reference time

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS Week	MP		Integer(0..1023)	
~~CHOICE TOW~~	~~MP~~			
~~>broadcasttype1~~				
~~>>GPS TOW sec~~	~~MP~~		~~Integer(0..604799)~~	~~GPS time-of-week when the message is broadcast seconds~~
~~>point-to-point deliveredtype2~~				
>>GPS TOW msec	MP		Integer(0..6.048*10^8-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit). ~~GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec~~
>>GPS TOW rem usec	~~M~~OP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000. GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
>>SFN	~~M~~OP		Integer(0..4095)	The SFN which the GPS TOW time stamps. SFN and GPS TOW msec and GPS TOW rem usec are included if relation GPS TOW/SFN is known to at least 10 µs.
SFN-TOW Uncertainty	OP		Enumerated (lessThan10, moreThan10)	This field indicates the uncertainty of the relation GPS TOW/SFN. lessThan10 means the relation is accurate to at least 10 ms.
>>Node B Clock Drift	OP		Real(-0.1..0.1 by step of 0.0125)	µsec/sec (ppm)
GPS TOW Assist	OP	1 to <maxSat>		~~Fields to help the UE with time-recovery (needed to predict satellite signal)~~
>SatID	MP		Enumerated(0..63)	~~Identifies the satellite for which the corrections are applicable~~
>TLM Message	MP		Bit string(14)	~~A 14-bit value representing the Telemetry Message (TLM) being broadcast by the GPS satellite identified by the particular SatID, with the MSB occurring first in the satellite transmission.~~
>Anti-Spoof	MP		Boolean	~~The Anti-Spoof and Alert flags that are being broadcast by the GPS satellite identified by SatID.~~
>Alert	MP		Boolean	
>TLM Reserved	MP		Bit string(2)	~~Two reserved bits in the TLM Word being broadcast by the GPS satellite identified by SatID, with the MSB occurring first in the satellite transmission.~~

10.3.7.97 UP GPS UTC model

The UTC Model field contains a set of parameters needed to relate GPS time to Universal Time Coordinate (UTC).

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
A_1	MP		Bit string(24)	sec/sec [12]
A_0	MP		Bit string(32)	seconds [12]
t_{ot}	MP		Bit string(8)	seconds [12]
Δt_{LS}	MP		Bit string(8)	seconds [12]
WN_t	MP		Bit string(8)	weeks [12]
WN_{LSF}	MP		Bit string(8)	weeks [12]
DN	MP		Bit string(8)	days [12]
Δt_{LSF}	MP		Bit string(8)	seconds [12]

10.3.7.98 UP IPDL parameters

This IE contains parameters for the IPDL mode. The use of this parameters is described in [25~~5.214~~]

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
IP spacing	MP		Integer(5,7,10,15,20,30,40,50)	The IPs are repeated every IP spacing frame.
IP length	MP		Integer(5,10)	The length in symbols of the idle periods
IP offset	MP		Integer(0..9)	Relates the BFN and SFN, should be same as T_cell defined in 25.402
Seed	MP		Integer(0..63)	Seed used to start the random number generator
Burst mode parameters	OP			
>Burst Start	MP		Integer(0..15)	The frame number where the 1st Idle Period Burst occurs within an SFN cycle. Scaling factor 256.
>Burst Length	MP		Integer(10..25)	Number of Idle Periods in a 'burst' of Idle Periods
>Burst freq	MP		Integer(1..16)	Number of 10ms frames between consecutive Idle Period bursts. Scaling factor 256.

~~The function IP_position(x) described below yields the position of the x^th Idle Period relative to a) the start of the SFN cycle when continuous mode or b) the start of a burst when in burst mode. The operator "%" denotes the modulo operator. Regardless of mode of operation, the Idle Period pattern is reset at the start of every SFN cycle. Continuous mode can be considered as a specific case of the burst mode with just one burst spanning the whole SFN cycle. Note also that x will be reset to x=1 for the first idle period in a SFN cycle for both continuous and burst modes and will also, in the case of burst mode, be reset for the first Idle Period in every burst.~~

~~Max_dev=150-IP length~~

~~rand(x)= (106.rand(x-1) + 1283)mod6075,~~

~~rand(0)=seed~~

~~IP_position(x) = x*IP_spacing*150 + rand(xmod64)modMax_dev+IP_offset~~

10.3.7.99 UP measured results

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UP Multiple Sets	OP		UP Multiple Sets 10.3.7.102	If this IE is absent, a single measurement set is included.
UP reference cell Identity	OP		Primary CPICH Info 10.3.6.60	
UP OTDOA measured~~ment~~ results	OP		UP OTDOA measured~~ment~~ results 10.3.7.105	
UP Position estimate info	OP		UP Position estimate info 10.3.7.109	
UP GPS measured~~ment~~ results	OP		UP GPS measured results~~ment~~ 10.3.7.93	
UP error	OP		UP error 10.3.7.87	Included if UP error occurred

10.3.7.100 UP measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UP reporting quantity	MP		UP reporting quantity 10.3.7.111	
CHOICE reporting criteria	MP			
>UP reporting criteria			UP reporting criteria 10.3.7.110	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement
UP OTDOA assistance data	CV-*OTDOA*~~OP~~		UP OTDOA assistance data 10.3.7.103	
UP GPS assistance data	OP		UP GPS assistance data 10.3.7.90	

Condition	Explanation
OTDOA	This IE is mandatory if the IE "Positioning method" is set to "OTDOA" or "OTDOA or GPS".

10.3.7.101 UP measurement event results

This IE contains the measurement event results that are reported to UTRAN for UP measurements.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE Event ID	MP			
>7a				
>>UP Position	MP		UP Position 10.3.7.109	
>7b				
>> UP OTDOA measurement	MP		UP OTDOA measurement 10.3.7.105	
>7c				
>> UP GPS measurement	MP		UP GPS measurement 10.3.7.93	

10.3.7.102 UP multiple sets

This ~~element~~ IE indicates how many OTDOA Measurement Information sets or GPS Measurement Information sets, and Reference cells are included in this element. ~~This element is optional. If this element is absent, a single measurement set is included.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Number of OTDOA-IPDL/GPS Measurement Information Sets	MP		Integer(2..3)	
Number of Reference Cells	MP		Integer(1..3)	

Reference Cell relation to Measurement Elements	*CV-MeasInfoSetAndNumRefCells*~~OP~~		Enumerated(RefCellRel_1, RefCellRel_2, RefCellRel_3 ~~First reference cell is related to first and second OTDOA-IPDL/GPS Measurement Information Sets, and second reference cell is related to third OTDOA-IPDL/GPS Measurement Information Sets. First reference cell is related to first and third OTDOA-IPDL/GPS Measurement Information Sets, and second reference cell is related to second OTDOA-IPDL/GPS Measurement Information Sets. First reference cell is related to first OTDOA-IPDL/GPS Measurement Information Sets, and second reference cell is related to second and third OTDOA/GPS Measurement Information Sets.~~)	see NOTE This ~~field~~ IE indicates how the reference cells listed in this element relate to measurement sets later in this component. ~~This field is conditional and included only if Number of OTDOA-IPDL/GPS Measurement Information Sets is '3' and Number of Reference cells is '2'.~~ If this ~~field~~ IE is not included, the relation between reference cell and Number of OTDOA-IPDL/GPS Measurement Information Sets is as follows: If there are three sets and three reference cells -> First reference cell relates to first set, second reference cell relates to second set, and third reference cell relates to third set. If there are two sets and two reference cells -> First reference cell relates to first set, and second reference cell relates to second set. If there is only one reference cell and 1-3 sets -> this reference cell relates to all sets.

NOTE: The following table gives the mapping of the IE " Reference Cell relation to Measurement Elements"

Value	Indication
RefCellRel_1	First reference cell is related to first and second OTDOA-IPDL/GPS Measurement Information Sets, and second reference cell is related to third OTDOA-IPDL/GPS Measurement Information Sets.
RefCellRel_2	First reference cell is related to first and third OTDOA-IPDL/GPS Measurement Information Sets, and second reference cell is related to second OTDOA-IPDL/GPS Measurement Information Sets.
RefCellRel_3	First reference cell is related to first OTDOA-IPDL/GPS Measurement Information Sets, and second reference cell is related to second and third OTDOA/GPS Measurement Information Sets.

Condition	Explanation
MeasInfoSetAndNumRefCells	This IE is present only if the IE "Number of OTDOA-IPDL/GPS Measurement Information Sets" is '3' and the IE "Number of Reference cells" is '2'.

10.3.7.103 UP OTDOA assistance data

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UP OTDOA reference cell info~~for assistance data~~	OP		UP OTDOA ~~reference~~ cell info~~for assistance data~~ 10.3.7.108	
UP OTDOA neighbour cell list	OP	1 to <maxCellMeas>		
>UP OTDOA neighbour cell info~~measurement assistance data~~	OP	~~1 to <maxCellMeas>~~	UP OTDOA neighbour cell info~~measurement assistance data~~ 10.3.7.106	
~~UP IPDL parameters~~	~~OP~~		~~UP IPDL parameters 10.3.7.98~~	~~If this element is not included there are no idle periods present~~

~~10.3.7.104 UP OTDOA assistance for SIB~~

~~Information Element/Group name~~	~~Need~~	~~Multi~~	~~Type and Reference~~	~~Semantics description~~
~~UP OTDOA Data ciphering infoCiphering parameters~~	~~OP~~		~~UP Ciphering info 10.3.7.86~~	~~Determines if DGPS correction fields are ciphered If this IE is present then the IE "UP OTDOA Assistance Data" is ciphered in accordance with the Data Assistance Ciphering Algorithm specified in [18]~~
~~UP OTDOA assistance data~~	~~MP~~		~~UP OTDOA assistance data 10.3.7.103~~	
~~>Ciphering Key Flag~~	~~MP~~		~~Bitstring(1)~~	~~See note 1~~
~~>Ciphering Serial Number~~	~~MP~~		~~Integer(0..65535)~~	~~The serial number used in the DES ciphering algorithm~~
~~Search Window Size~~	~~MP~~		~~Integer(10, 20, 30, 40, 50, 60,70, infinity)~~	~~Specifies the maximum size of the search window in chips. Infinity means more~~
~~Reference Cell Position~~	~~MP~~		~~Ellipsoid point or Ellipsoid point with altitude as defined in 23.032~~	~~The position of the antenna which defines the serving cell. Used for the UE based method.~~
~~UP IPDL parameters~~	~~OP~~		~~UP IPDL parameters 10.3.7.98~~	~~If this element is not included there are no idle periods present~~
~~Cells to measure on~~	~~MP~~	~~1 to <maxCellMeas>~~		
~~>SFN-SFN drift~~	~~OP~~		~~Real(0,+0.33,+0.66,+1,+1.33,+1.66,+2,+2.5,+3,+4, +5,+7,+9,+11,+13,+15,-0.33,-0.66,-1,-1.33,-1.66,-2,-2.5,-3,-4,-5,-7,-9,-11,-13,-15)~~	~~The SFN-SFN drift value indicate the relative time drift in meters per second. Positive and negative values can be indicated as well as no drift value.~~
~~>Primary CPICH info~~	~~MP~~		~~Primary CPICH info 10.3.6.60~~	
~~>Frequency info~~	~~OP~~		~~Frequency info 10.3.6.36~~	~~Default the same. Included if different~~
~~>SFN-SFN observed time difference~~	~~MP~~		~~SFN-SFN observed time difference 10.3.7.63~~	~~Gives the relative timing compared to the reference cell.~~ ~~UE shall use CHOICE "type 1" in IE "SFN-SFN observed time difference".~~
~~>Fine SFN-SFN~~	~~MP~~		~~Real(0,0.25, 0.5,0.75)~~	~~Gives finer resolution for UE-Based method~~ ~~In chips~~
~~>Cell Position~~	~~MD~~			~~Default = Same as previous cell~~
~~>>Relative North~~	~~MP~~		~~Integer(-32767..32767)~~	~~Seconds, scale factor 0.03. Relative position compared to reference cell.~~

~~>>Relative East~~	~~MP~~		~~Integer(-32767..327676)~~	~~Seconds, scale factor 0.03. Relative position compared to ref. cell.~~
~~>>Relative Altitude~~	~~MP~~		~~Integer(-4095..4095)~~	~~Relative altitude in meters compared to reference cell.~~

~~NOTE 1: The UE always receives two (2) cipher keys during the location update procedure. One of the keys is time-stamped to be current one and the other is time-stamped to be the next one. Thus, the UE always has two cipher keys in memory. The Cipher Key Change Indicator in this broadcast message instructs the UE whether to use current or next cipher key for deciphering the received broadcast message. The UE shall interpret this IE as follows:~~

- ~~**Ciphering Key Flag**(previous message) = **Ciphering Key Flag**(this message) => Deciphering Key not changed~~

- ~~**Ciphering Key Flag**(previous message) <> **Ciphering Key Flag**(this message) => Deciphering Key changed~~

10.3.7.105 UP OTDOA measurement

The purpose of the OTDOA Measurement Information element is to provide OTDOA measurements of signals sent from the reference and neighbour cells.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SFN	MP		Integer(0..4095)	SFN during which the last measurement was performed
UE Rx-Tx time difference type 2	MP		UE Rx-Tx time difference type 2 10.3.7.84	
UP OTDOA quality type	MP		UP OTDOA quality type 10.3.7.107	
Neighbours	MP	0 to ~~..~~<maxCellMeas>		~~Number of neighbours included in this IE~~
>CHOICE mode				
>>FDD				
>>>Neighbour Identity	MD~~OP~~		Primary CPICH info 10.3.6.60	~~If this field is left out it the identity~~Default value is the same as in the first set of multiple sets.
>>TDD				
>>>Cell and Channel ID	MD		Cell and Channel Identity info 10.3.6.xx	Default value is the same as in the first set of multiple sets.
>UP OTDOA quality type	MP		UP OTDOA quality type 10.3.7.107	Quality of the OTDOA from the neighbour cell.
>SFN-SFN observed time difference	MP		SFN-SFN observed time difference 10.3.7.63	Gives the timing relative to the reference cell. Only type 2 is allowed. Type 2 means that only the slot timing is accounted for
>UE Rx-Tx time difference type 2	OP		UE Rx-Tx time difference type 2 10.3.7.84	Included if the neighbour is in the active set

10.3.7.106 UP OTDOA neighbour cell info~~measurement assistance data~~

This IE gives approximate cell timing in order to decrease the search window.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~CHOICE PositioningMode~~	~~MP~~			
~~>UE based~~				
CHOICE mode				
>FDD				
>>~~>>~~Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>cell and channel ID	MP		Cell and Channel Identity info 10.3.6.xx	Identifies the channel to be measured on.
>~~>~~Frequency info	MD~~OP~~		Frequency info 10.3.6.36	Default value is the existing value of frequency information~~the same. Included if different~~
>>IPDL parameters	CV-*IPDLs*		UP IPDL parameters 10.3.7.98	
SFN-SFN relative~~observed~~ time difference	MP		~~SFN-SFN observed time difference 10.3.7.63~~ Integer(0..9830399)	Gives the relative timing compared to the reference cell. in chips~~UE shall use CHOICE "type 1" in IE "SFN-SFN observed time difference"~~.
~~Fine SFN-SFN~~	~~OP~~		~~Real(0,0.25, 0.5,0.75)~~	~~Gives finer resolution for UE-Based~~
SFN-SFN drift	OP		Real(0,+0.33,+0.66,+1,+1.33,+1.66,+2,+2.5,+3,+4,+5,+7,+9,+11,+13,+15,-0.33,-0.66,-1,-1.33,-1.66,-2,-2.5,-3,-4,-5,-7,-9,-11,-13,-15)	meters/sec
Search Window Size	MP		Integer(10, 20, 30, 40, 50, 60,70, infinity)	~~Specifies the maximum size of the search window in~~ chips. Infinity means more
CHOICE PositioningMode				
>UE based				
>>Cell Position	MD			Default is the same as previous cell
>>>Relative North	M~~O~~P		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference~~.~~ Cell.
>>>Relative East	M~~O~~P		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference~~.~~ Cell.
>>>Relative Altitude	OP		Integer(-4000..4000)	Relative altitude in meters compared to reference~~.~~ Cell.
>>Fine SFN-SFN	MP		Real(0..0.9375 in steps of 0.0625)	Gives finer resolution
>>Round Trip Time	OP		Real(876.00 .. 2923.875) in steps of 0.0625	In chips. Included if cell is in active set.
>UE assisted				(no data)

~~>>IPDL parameters~~	~~CV-*IPDLs*~~		~~UP IPDL parameters 10.3.7.98~~	
~~>>IPDL Configuration~~	~~CV-*IPDLs*~~			
~~>>Primary CPICH info~~	~~MP~~		~~Primary CPICH info 10.3.6.60~~	
~~>>Frequency info~~	~~MD~~		~~Frequency info 10.3.6.36~~	~~Default value is the existing value of frequency information~~
~~>>~~				~~If this element is not included there are no idle periods present~~

Condition	Explanation
IPDLs	This IE is present only if IPDLs are applied.

10.3.7.107 UP OTDOA quality type

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE Quality type	MP			
>STD_10				
>>Reference Quality 10	MP		Integer(10..320 by step of 10)	Std of TOA measurements from the cell
>STD_50				
>>Reference Quality 50	MP		Integer(50..1600 by step of 50)	Std of TOA measurements from the cell
>CPICH Ec/N0				
>>CPICH Ec/N0	MP		Enumerated(<–24, -24 dB ≤ CPICH Ec/No < –23 dB,.. –1 dB ≤ CPICH Ec/No < –0 dB, >=0 dB)	CPICH Ec/N0 for the measurement
>DEFAULT_QUALITY				
>>Reference Quality	MP		Enumerated(0-19 meters, 20-39 meters, 40-79 meters, 80-159 meters, 160-319 meters, 320-639 meters, 640-1319 meters over 1320 meters)	Estimated error in meters.

CHOICE *Quality type*	Condition under which the given quality type is chosen
STD_10	Chosen when the quality type is standard deviation with a step-size of 10 m
STD_50	Chosen when the quality type is standard deviation with a step-size of 50 m
CPICH Ec/N0	Chosen when the quality type is CPICH Ec/N0
Default	Chosen if the quality type field is not included.

10.3.7.108 UP OTDOA reference cell info~~for assistance data~~

This IE defines the cell used for time references in all OTDOA measurements.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SFN	OP		Integer (0..4095)	Time stamp (SFN of Reference Cell) of the SFN-SFN observed time differences and SFN-SFN drift rates. Included if any SFN-SFN drift value is included.
CHOICE mode				
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>cell and channel ID	MP		Cell and Channel Identity info 10.3.6.xx	Identifies the channel to be measured on.
Frequency info	MD~~OP~~		Frequency info 10.3.6.36	Default value is the existing value of frequency information.~~Default the same. Included if different~~
~~Cell Position~~	~~OP~~		~~Ellipsoid point or Ellipsoid point with altitude as defined in 23.032~~	~~The position of the antenna which defines the cell. Can be used for the UE based method.~~
CHOICE PositioningMode				
>UE based				
>>CHOICE *Cell Position*	~~OP~~			The position of the antenna which defines the cell. Used for the UE based method.
>>>Ellipsoid point	OP		Ellipsoid point 10.3.8.a	
>>>Ellipsoid point with altitude	OP		Ellipsoid point with altitude 10.3.8.d	
>>Round Trip Time	OP		Real(876.00 .. 2923.875) in steps of 0.0625	In chips.
>UE assisted				(no data)
IPDL parameters	OP		UP IPDL parameters 10.3.7.98	If this element is not included there are no idle periods present

10.3.7.109 UP position estimate info

The purpose of this IE ~~Location Information element~~ is to provide the ~~location~~ position estimate from the UE to the network, if the UE is capable of determining its own position.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Reference SFN	MP		Integer(0..4095)	The SFN for which the location is valid
GPS TOW msec	CV-*Capability and request*		Integer(0..6.048*10^8-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit). This time-stamps the beginning of the frame defined in Reference SFN GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
GPS TOW rem usec	CV-*Capability and request*		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
~~Position estimate~~	~~MP~~		~~23.032, allowed types are Ellipsoid Point; Ellipsoid point with uncertainty circle; Ellipsoid point with uncertainty ellipse; Ellipsoid point with altitude; Ellipsoid point with altitude and uncertainty ellipse.~~	
~~Position estimate~~	~~MP~~		~~GAD position 10.3.8.f~~	
CHOICE *Position estimate*	MP			
>Ellipsoid Point			Ellipsoid Point; 10.3.8.a	
>Ellipsoid point with uncertainty circle			Ellipsoid point with uncertainty circle 10.3.8.b	
>Ellipsoid point with uncertainty ellipse			Ellipsoid point with uncertainty ellipse 10.3.8.c	
>Ellipsoid point with altitude			Ellipsoid point with altitude 10.3.8.d	
>Ellipsoid point with altitude and uncertainty ellipsiod			Ellipsoid point with altitude and uncertainty ellipsoid 10.3.8.e	

Condition	Explanation
Capability and request	This field is included only if the UE has this capability *and* if it was requested in the UP reporting quantity and if the method was UE-based GPS

10.3.7.110 UP reporting criteria

The triggering of the event-triggered reporting for an UP measurement. ~~There are three types of events. The first, 7a, is for UE-based methods and is triggered when the position has changed more than a threshold. The second one, 7b, is primarily for UE assisted methods, but can be used also for UE based. It is triggered when the SFN-SFN measurement has changed more than a certain threshold. The third one, 7c, is triggered when the GPS time and the SFN time has drifted apart more than a certain threshold.~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Parameters required for each event	OP	1 to <maxMeasEvent>		
>Amount of reporting	MP		Integer(1, 2, 4, 8, 16, 32, 64,infinite)	
>Report first fix	MP		Boolean	If true the UE reports the position once the measurement control is received, and then each time an event is triggered.
>Measurement interval	MP		Integer(5,15, 60,300,900,1800,3600,7200)	Indicates how often the UE should make the measurement In seconds
>CHOICE Event ID				
>>7a				
>>>Threshold Position Change	MP		Integer(10,20,30,40,50,100,200,300,500,1000,2000,5000,10000,20000,50000,100000)	Indicated how much the position should change compared to last reported position fix in order to trigger the event.
>>7b				
>>>Threshold SFN-SFN change	MP		Real(0.25,0.5,1,2,3,4,5,10,20,50,100, 200,500,1000,2000,5000)	Chips. Indicates how much the SFN-SFN measurement of ANY measured cell is allowed to change before the event is triggered.
>>7c				
>>>Threshold SFN-GPS TOW	MP		Integer(1,2,3,5,10,20,50,100)	Time in ms. When the GPS TOW and SFN timer has drifted apart more than the specified value the event is triggered)

10.3.7.111 UP reporting quantity

The purpose of the element is to express the allowed/required location method(s), and to provide information required QoS.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Method Type	MP		Enumerated(UE assisted, UE based, UE based is preferred but UE assisted is allowed, UE assisted is preferred but UE based is allowed)	
Positioning Methods	MP		Enumerated(OTDOA, GPS, OTDOA or GPS)	~~Indicates which location method or methods should be used. The third option means that both can be reported. OTDOA includes IPDL if idle periods are present.~~
Response Time	MP		Integer(1,2,4, 8, 16, 32, 64, 128)	~~Indicates the desired response time in~~ seconds
Accuracy	CV - *Method Type*		Integer (0..100)~~Bit string(7)~~	~~Mandatory in all cases except when Method Type is UE assisted, then it is optional.~~ in percentage~~23.032~~
GPS timing of Cell wanted	MP		Boolean	If true the SRNC wants the UE to report the SFN-GPS timing of the reference cell. This is however optional in the UE.
Multiple Sets	MP		Boolean	TRUE indicates that ~~This field indicates whether~~the UE is requested to send multiple *OTDOA/GPS Measurement Information Sets*. ~~The maximum number of measurement sets is three. This is field is mandatory.~~ UE is expected to include the current measurement set.
Additional Assistance Data Request	MP		Boolean	TRUE indicates that the UE is requested to send the IE "Additional assistance Data Request" when the IE "UP Error" is present in the UP measured results.
Environment Characterization	OP		Enumerated(possibly heavy multipath and NLOS conditions, no or light multipath and usually LOS conditions, not defined or mixed environment)	~~The first category correspond to e.g. Urban or Bad Urban channels.~~ ~~The second category corresponds to Rural or Suburban channels~~

Condition	Explanation
Method Type	The IE is optional if the IE "Method Type" is 'UE assisted'; otherwise it is mandatory

10.3.7.XX UP GPS Clock and Ephemeris parameters

This IE contain information for GPS ephemeris and clock correction.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
C/A or P on L2	MP		Bit string(2)	Code(s) on L2 Channel [12]
URA Index	MP		Bit string(4)	User Range Accuracy [12]
SV Health	MP		Bit string(6)	[12]
IODC	MP		Bit string(10)	Issue of Data, Clock [12]
L2 P Data Flag	MP		Bit string(1)	[12]
SF 1 Reserved	MP		Bit string(87)	[12]
T_{GD}	MP		Bit string(8)	Estimated group delay differential [12]
t_{oc}	MP		Bit string(16)	apparent clock correction [12]
af_2	MP		Bit string(8)	apparent clock correction [12]
af_1	MP		Bit string(16)	apparent clock correction [12]
af_0	MP		Bit string(22)	apparent clock correction [12]
C_{rs}	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term to the Orbit Radius (meters) [12]
Δn	MP		Bit string(16)	Mean Motion Difference From Computed Value (semi-circles/sec) [12]
M_0	MP		Bit string(32)	Mean Anomaly at Reference Time (semi-circles) [12]
C_{uc}	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term To The Argument Of Latitude (radians) [12]
e	MP		Bit string(32)	c
C_{us}	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term To The Argument Of Latitude (radians) [12]
$(A)^{1/2}$	MP		Bit string(32)	Semi-Major Axis (meters)$^{1/2}$ [12]
t_{oe}	MP		Bit string(16)	Reference Time Ephemeris [12]
Fit Interval Flag	MP		Bit string(1)	[12]
AODO	MP		Bit string(5)	Age Of Data Offset [12]
C_{ic}	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term To The Angle Of Inclination (radians) [12]
$OMEGA_0$	MP		Bit string(32)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles) [12]
C_{is}	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term To The Angle Of Inclination (radians) [12]
i_0	MP		Bit string(32)	Inclination Angle at Reference Time (semi-circles) [12]
C_{rc}	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term to the Orbit Radius (meters) [12]
ω	MP		Bit string(32)	Argument of Perigee (semi-circles) [12]
OMEGAdot	MP		Bit string(24)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles/sec) [12]
Idot	MP		Bit string(14)	Rate of Inclination Angle (semi-circles/sec) [12]

10.3.8.a Ellipsoid point

This IE contains the description of an ellipsoid point as in [24~~3.032~~].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2^{23}-1)	The IE value (*N*) is derived by this formula: $N \le 2^{23} X/90 < N+1$ *X* being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2^{23}...2^{23}-1)	The IE value (*N*) is derived by this formula: $N \le 2^{24} X/360 < N+1$ *X* being the longitude in degree (-180°..+180°)

10.3.8.b Ellipsoid point with uncertainty Circle

This IE contains the description of an ellipsoid point with an uncertainty circle as in [24~~3.032~~].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2^{23}-1)	The IE value (N) is derived by this formula: $N \le 2^{23} X/90 < N+1$ *X* being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2^{23}...2^{23}-1)	The IE value (*N*) is derived by this formula: $N \le 2^{24} X/360 < N+1$ *X* being the longitude in degree (-180°..+180°)
Uncertainty Code	MP		Integer (0...127)	The uncertainty *r* is derived from the "uncertainty code" *k* by $r = 10x(1.1^{k}-1)$

10.3.8.c Ellipsoid point with uncertainty Ellipse

This IE contains the description of an ellipsoid point with an uncertainty ellipse as in [24~~3.032~~].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2^{23}-1)	The IE value (N) is derived by this formula: $N \le 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2^{23}...2^{23}-1)	The IE value (N) is derived by this formula: $N \le 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Uncertainty semi-major	MP		Integer (0...127)	The uncertainty *r* is derived from the "uncertainty code" *k* by $r = 10x(1.1^k-1)$
Uncertainty semi-minor	MP		Integer (0...127)	The uncertainty *r* is derived from the "uncertainty code" *k* by $r = 10x(1.1^k-1)$
Orientation of major axis	MP		Integer (0..179 by step of 2)	The IE value (N) is derived by this formula: $N \le a / 2 < N+1$ a being the orientation in degree (0°.. 360°)
Confidence	MP		Integer (0..100)	in percentage

10.3.8.d Ellipsoid point with Altitude

This IE contains the description of an ellipsoid point with altitude as in [24~~3.032~~].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2^{23}-1)	The IE value (N) is derived by this formula: $N \le 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2^{23}...2^{23}-1)	The IE value (N) is derived by this formula: $N \le 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Altitude Direction	MP		Enumerated (Height, Depth)	
Altitude	MP		Integer (0..2^{15}-1)	The IE value (N) is derived by this formula: $N \le a < N+1$ a being the altitude in metres

10.3.8.e Ellipsoid point with Altitude and uncertainty ellipsoid

This IE contains the description of an ellipsoid point with altitude and uncertainty ellipsoid as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer ($0...2^{23}-1$)	The IE value (N) is derived by this formula: $N \le 2^{23} X/90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer ($-2^{23}...2^{23}-1$)	The IE value (N) is derived by this formula: $N \le 2^{24} X/360 < N+1$ X being the longitude in degree (-180°..+180°)
Altitude Direction	MP		Enumerated (Height, Depth)	
Altitude	MP		Integer ($0..2^{15}-1$)	The IE value (N) is derived by this formula: $N \le a < N+1$ a being the altitude in metres
Uncertainty semi-major	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k-1)$
Uncertainty semi-minor	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k-1)$
Orientation of major axis	MP		Integer (0..179 by step of 2)	The IE value (N) is derived by this formula: $N \le a/2 < N+1$ a being the orientation in degree (0°.. 360°)
Uncertainty Altitude	MP		Integer(0..127)	The uncertainty in altitude, h, expressed in metres is mapped from the IE value (K), with the following formula: $h = C\left((1+x)^K - 1\right)$ with C = 45 and x = 0.025.
Confidence	MP		Integer (0..100)	in percentage

10.3.8.21 SIB type

The SIB type identifies a specific system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB type	MP		Enumerated, see below	

The list of values to encode is:

Master information block,

System Information Type 1,

System Information Type 2,

System Information Type 3,

System Information Type 4,

System Information Type 5,

System Information Type 6,

System Information Type 7,

System Information Type 8,

System Information Type 9,

System Information Type 10,

System Information Type 11,

System Information Type 12,

System Information Type 13,

System Information Type 13.1,

System Information Type 13.2,

System Information Type 13.3,

System Information Type 13.4,

System Information Type 14,

System Information Type 15,

System Information Type 15.1,

System Information Type 15.2,

System Information Type 15.3,

System Information Type 15.4,

System Information Type 16,

System Information Type 17,

Scheduling Block 1,

Scheduling Block 2.

in addition, at least one spare value, criticality: ignore, is needed.

10.3.8.22 SIB type SIBs only

The SIB type identifies a specific system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB type SIBs only	MP		Enumerated, see below	

The list of values to encode is:

System Information Type 1,

System Information Type 2,

System Information Type 3,

System Information Type 4,

System Information Type 5,

System Information Type 6,

System Information Type 7,

System Information Type 8,

System Information Type 9,

System Information Type 10,

System Information Type 11,

System Information Type 12,

System Information Type 13,

System Information Type 13.1,

System Information Type 13.2,

System Information Type 13.3,

System Information Type 13.4,

System Information Type 14,

System Information Type 15,

System Information Type 15.1,

System Information Type 15.2,

System Information Type 15.3,

System Information Type 15.4,

System Information Type 16,

System Information Type 17.

in addition, at least one~~8~~ spare values, criticality: ignore, are needed.

13.4.32 VALUE_TAG

This variable contains information about the value tag for the last received system information block of a given type, for all system information blocks using value tags.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB value tag	MP		MIB value tag 10.3.8.9	Value tag for the master information block
SB 1 value tag	MP		Cell value tag 10.3.8.4	Value tag for the scheduling block type 1
SB 2 value tag	MP		Cell value tag 10.3.8.4	Value tag for the scheduling block type 2
SIB 1 value tag	CV-*GSM*		PLMN value tag 10.3.8.10	Value tag for the system information block type 1
SIB 2 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 2
SIB 3 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 3
SIB 4 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 4
SIB 5 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 5
SIB 6 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 6
CHOICE *mode*				
>FDD				
>>SIB 8 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 8
>TDD				(no data)
SIB 11 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 11
SIB 12 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 12
SIB 13 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13
SIB 13.1 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.1
SIB 13.2 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.2
SIB 13.3 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.3
SIB 13.4 value tag	CV-*ANSI*		Cell value tag 10.3.8.4	Value tag for the system information block type 13.4
SIB 15 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15
SIB 15.1 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15.1
SIB 15.2 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15.2
SIB 15.3 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15.3
SIB 15.4 value tag	MP		Cell value tag 10.3.8.4	Value tag for the system information block type 15.4
SIB 16 value tag	MP		PLMN value tag 10.3.8.10	Value tag for the system information block type 16

Condition	Explanation
GSM	This information is only stored when the PLMN Type in the variable SELECTED_PLMN is "GSM-MAP".
ANSI	This information is only stored when the PLMN Type in the variable SELECTED_PLMN is "ANSI-41".

```
-- ***************************************************
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- ***************************************************

AcquisitionSatInfo ::=              SEQUENCE {
    satID                               SatID,
    doppler0thOrder                     INTEGER (-2048..2047),
    extraDopplerInfo                    ExtraDopplerInfo                  OPTIONAL,
    codePhase                           INTEGER (0..1022),
    integerCodePhase                    INTEGER (0..19),
    gps-BitNumber                       INTEGER (0..3),
    codePhaseSearchWindow               CodePhaseSearchWindow,
    azimuthAndElevation                 AzimuthAndElevation               OPTIONAL
}

AcquisitionSatInfoList ::=          SEQUENCE (SIZE (1..maxSat)) OF
                                        AcquisitionSatInfo

AdditionalAssistanceData ::=        OCTET STRING (SIZE (1..38))

AdditionalMeasurementID-List ::=    SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasurementIdentity

AlmanacSatInfo ::=                  SEQUENCE {
    dataID                              INTEGER (0..3),
    satID                               SatID,
    e                                   BIT STRING (SIZE (16)),
    t-oa                                BIT STRING (SIZE (8)),
    deltaI                              BIT STRING (SIZE (16)),
    omegaDot                            BIT STRING (SIZE (16)),
    satHealth                           BIT STRING (SIZE (8)),
    a-Sqrt                              BIT STRING (SIZE (24)),
    omega0                              BIT STRING (SIZE (24)),
    m0                                  BIT STRING (SIZE (24)),
    omega                               BIT STRING (SIZE (24)),
    af0                                 BIT STRING (SIZE (11)),
    af1                                 BIT STRING (SIZE (11))
}

AlmanacSatInfoList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        AlmanacSatInfo

AverageRLC-BufferPayload ::=        ENUMERATED {
                                        pla0, pla4, pla8, pla16, pla32,
                                        pla64, pla128, pla256, pla512,
                                        pla1024, pla2k, pla4k, pla8k, pla16k,
                                        pla32k, pla64k, pla128k, pla256k,
                                        pla512k, pla1024k }

AzimuthAndElevation ::=             SEQUENCE {
    azimuth                             INTEGER (0..31),
    elevation                           INTEGER (0..7)
}

BadSatList ::=                      SEQUENCE (SIZE (1..maxSat)) OF
                                        INTEGER (0..63)

BCCH-ARFCN ::=                      INTEGER (0..1023)

BLER-MeasurementResults ::=         SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    dl-TransportChannelBLER             DL-TransportChannelBLER           OPTIONAL
}

BLER-MeasurementResultsList ::=     SEQUENCE (SIZE (1..maxTrCH)) OF
                                        BLER-MeasurementResults

BLER-TransChIdList ::=              SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

BSIC-VerificationRequired ::=       ENUMERATED {
                                        required, notRequired }

BSICReported ::=                    CHOICE {
    verifiedBSIC                        INTEGER (0..maxCellMeas),
    nonVerifiedBSIC                     BCCH-ARFCN
}

BurstModeParameters ::=             SEQUENCE {
```

```
    burstStart                          INTEGER (0..15),
    burstLength                         INTEGER (10..25),
    burstFreq                           INTEGER (1..16)
}

CellDCH-ReportCriteria ::=          CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

-- Actual value = IE value * 0.5
CellIndividualOffset ::=            INTEGER (-20..20)


CellInfo ::=                        SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    }
}

CellInfoSI-RSCP ::=                 SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-RSCP        OPTIONAL
}

CellInfoSI-ECN0 ::=                 SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-ECN0    OPTIONAL
}

CellInfoSI-HCS-RSCP ::=             SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
```

```
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-RSCP    OPTIONAL
}

CellInfoSI-HCS-ECN0 ::=             SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList            OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-ECN0    OPTIONAL
}

CellMeasuredResults ::=             SEQUENCE {
    cellIdentity                        CellIdentity                        OPTIONAL,
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    cellSynchronisationInfo         CellSynchronisationInfo         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            cpich-Ec-N0                         CPICH-Ec-N0                 OPTIONAL,
            cpich-RSCP                          CPICH-RSCP                  OPTIONAL,
            pathloss                            Pathloss                    OPTIONAL
        },
        tdd                                 SEQUENCE {
            cellParametersID                    CellParametersID,
            proposedTGSN                        TGSN                        OPTIONAL,
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP           OPTIONAL,
            timeslotISCP-List                   TimeslotISCP-List           OPTIONAL
        }
    }
}

CellMeasurementEventResults ::=     CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCPICH-Info,
    tdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCCPCH-Info
}

CellPosition ::=                    SEQUENCE {
    relativeNorth                       INTEGER (-32767..32767),
    relativeEast                        INTEGER (-32767..32767),
    relativeAltitude                    INTEGER (-4095..4095)
}

CellReportingQuantities ::=         SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    cellIdentity-reportingIndicator                 BOOLEAN,
    cellSynchronisationInfoReportingIndicator           BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            cpich-Ec-N0-reportingIndicator                          BOOLEAN,
            cpich-RSCP-reportingIndicator                           BOOLEAN,
            pathloss-reportingIndicator                         BOOLEAN
        },
        tdd                                 SEQUENCE {
            timeslotISCP-reportingIndicator                     BOOLEAN,
            proposedTGSN-ReportingRequired                      BOOLEAN,
            primaryCCPCH-RSCP-reportingIndicator                    BOOLEAN,
            pathloss-reportingIndicator                         BOOLEAN
        }
    }
}

CellSelectReselectInfoSIB-11-12 ::= SEQUENCE {
    q-Offset1S-N                        Q-OffsetS-N                         DEFAULT 0,
    q-Offset2S-N                        Q-OffsetS-N                         OPTIONAL,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    hcs-NeighbouringCellInformation-RSCP        HCS-NeighbouringCellInformation-RSCP
    OPTIONAL,
```

```
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                       OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        gsm                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-RSCP ::=    SEQUENCE {
    q-OffsetS-N                     Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                       OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        gsm                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-ECN0 ::=    SEQUENCE {
    q-Offset1S-N                        Q-OffsetS-N                     DEFAULT 0,
    q-Offset2S-N                        Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                       OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        gsm                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-HCS-RSCP ::=    SEQUENCE {
    q-OffsetS-N                     Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    hcs-NeighbouringCellInformation-RSCP        HCS-NeighbouringCellInformation-RSCP
    OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                       OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        gsm                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        }
    }
}

CellSelectReselectInfoSIB-11-12-HCS-ECN0 ::=    SEQUENCE {
    q-Offset1S-N                        Q-OffsetS-N                     DEFAULT 0,
    q-Offset2S-N                        Q-OffsetS-N                     DEFAULT 0,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power               OPTIONAL,
    hcs-NeighbouringCellInformation-ECN0        HCS-NeighbouringCellInformation-ECN0
    OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            q-QualMin                           Q-QualMin                       OPTIONAL,
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        tdd                                 SEQUENCE {
            q-RxlevMin                          Q-RxlevMin                      OPTIONAL
        },
        gsm                                 SEQUENCE {
```

```
            q-RxlevMin                          Q-RxlevMin                  OPTIONAL
        }
    }
}

CellSynchronisationInfo ::=         SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            countC-SFN-Frame-difference         CountC-SFN-Frame-difference     OPTIONAL,
            tm                                  INTEGER(0..38399)
        },
        tdd                                 SEQUENCE {
            countC-SFN-Frame-difference         CountC-SFN-Frame-difference
        }
    }
}

CellToMeasure ::=                   SEQUENCE {
    sfn-sfn-Drift                       INTEGER (0..30)                     OPTIONAL,
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    sfn-SFN-ObservedTimeDifference      SFN-SFN-ObsTimeDifference1,
    fineSFN-SFN                         FineSFN-SFN,
    cellPosition                        CellPosition                        OPTIONAL
}

CellToMeasureInfoList ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellToMeasure

CellToReport ::=                    SEQUENCE {
    bsicReported                        BSICReported
}

CellToReportList ::=                SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellToReport

CodePhaseSearchWindow ::=           ENUMERATED {
                                        w1023, w1, w2, w3, w4, w6, w8,
                                        w12, w16, w24, w32, w48, w64,
                                        w96, w128, w192 }

CountC-SFN-Frame-difference ::= SEQUENCE {
    countC-SFN-High                 INTEGER(0..15),         -- Actual value = IE value * 256
    off                             INTEGER(0..255)
}

CPICH-Ec-N0 ::=                     INTEGER (-20..0)

-- IE value 0 = <-24 dB, 1 = between -24 and -23 and so on
CPICH-Ec-N0-OTDOA ::=               INTEGER (0..26)

CPICH-RSCP ::=                      INTEGER (-115..-40)


DeltaPRC ::=                        INTEGER (-127..127)

DeltaRRC ::=                        INTEGER (-7..7)

DGPS-CorrectionSatInfo ::=          SEQUENCE {
    satID                               SatID,
    iode                                BIT STRING (SIZE (8)),
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
    deltaPRC2                           DeltaPRC,
    deltaRRC2                           DeltaRRC,
    deltaPRC3                           DeltaPRC            OPTIONAL,
    deltaRRC3                           DeltaRRC            OPTIONAL
}

DGPS-CorrectionSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-CorrectionSatInfo
```

~~DGPS-Information ::= SEQUENCE {~~
~~satID SatID,~~
~~iode IODE,~~
~~udre UDRE,~~
~~prc PRC,~~
~~rrc RRC,~~
~~deltaPRC2 DeltaPRC,~~
~~deltaRRC2 DeltaRRC~~
}

```
~~DGPS-InformationList ::=            SEQUENCE (SIZE (1..maxSat)) OF~~
~~                                        DGPS-Information~~

DiffCorrectionStatus ::=            ENUMERATED {
                                        udre-1-0, udre-0-75, udre-0-5, udre-0-3,
                                        udre-0-2, udre-0-1, noData, invalidData }

-- Actual value = IE value * 0.02
DL-PhysicalChannelBER ::=           INTEGER (0..255)

DL-TransportChannelBLER ::=         INTEGER (0..63)

DopplerUncertainty ::=              ENUMERATED {
                                        hz12-5, hz25, hz50, hz100, hz200 }

EllipsoidPoint ::=                  ~~OCTET STRING (SIZE (7))~~SEQUENCE {
    latitudeSign        ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
}

EllipsoidPointAltitude ::=          ~~OCTET STRING (SIZE (9))~~ SEQUENCE {
    latitudeSign        ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
    altitudeDirection   ENUMERATED (height, depth),
    altitude            INTEGER (0..16383)
}

EllipsoidPointAltitudeEllipsoide ::=    ~~OCTET STRING (SIZE (14))~~ SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    altitudeDirection       ENUMERATED (height, depth),
    altitude                INTEGER (0..16383),
    uncertaintySemiMajor    INTEGER (0..127),
    uncertaintySemiMinor    INTEGER (0..127),
    orientationMajorAxis    INTEGER (0..89),
    uncertaintyAltitude     INTEGER (0..127),
    confidence              INTEGER (0..100)
}

EllipsoidPointUncertCircle ::=      ~~OCTET STRING (SIZE (8))~~ SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    uncertaintyCode         INTEGER (0..127),
}

EllipsoidPointUncertEllipse ::=     ~~OCTET STRING (SIZE (11))~~SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    uncertaintySemiMajor    INTEGER (0..127),
    uncertaintySemiMinor    INTEGER (0..127),
    orientationMajorAxis    INTEGER (0..89),
    confidence              INTEGER (0..100)
}

EnvironmentCharacterisation ::=     ENUMERATED {
                                        possibleHeavyMultipathNLOS,
                                        lightMultipathLOS,
                                        notDefined }

Event1a ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1b ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W
}

Event1c ::=                         SEQUENCE {
    replacementActivationThreshold      ReplacementActivationThreshold,
```

```
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1e ::=                     SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    thresholdUsedFrequency              ThresholdUsedFrequency
}

Event1f ::=                     SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    thresholdUsedFrequency              ThresholdUsedFrequency
}

Event2a ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2b ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2c ::=                         SEQUENCE {
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2d ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

Event2e ::=                         SEQUENCE {
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2f ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

Event3a ::=                         SEQUENCE {
    thresholdOwnSystem                  Threshold,
    w                                   W,
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

Event3b ::=                         SEQUENCE {
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL

}

Event3c ::=                         SEQUENCE {
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
```

```
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

Event3d ::=                         SEQUENCE {
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

EventIDInterFreq ::=                ENUMERATED {
                                        e2a, e2b, e2c, e2d, e2e, e2f }

EventIDInterRAT ::=                 ENUMERATED {
                                        e3a, e3b, e3c, e3d }

EventIDIntraFreq ::=                ENUMERATED {
                                        e1a, e1b, e1c, e1d, e1e,
                                        e1f, e1g, e1h, e1i }

EventResults ::=                    CHOICE {
    intraFreqEventResults               IntraFreqEventResults,
    interFreqEventResults               InterFreqEventResults,
    interRATEventResults                InterRATEventResults,
    trafficVolumeEventResults           TrafficVolumeEventResults,
    qualityEventResults                 QualityEventResults,
    ue-InternalEventResults             UE-InternalEventResults,
    up-MeasurementEventResults          UP-MeasurementEventResults
}

ExtraDopplerInfo ::=                SEQUENCE {
    doppler1stOrder                     INTEGER (-42..21),
    dopplerUncertainty                  DopplerUncertainty
}

FACH-MeasurementOccasionInfo ::=    SEQUENCE {
    fACH-meas-occasion-coeff            INTEGER (1..12)                     OPTIONAL,
    inter-freq-FDD-meas-ind             BOOLEAN,
    inter-freq-TDD-meas-ind             BOOLEAN,
    inter-RAT-meas-ind                  SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                            RAT-Type                        OPTIONAL
}

FilterCoefficient ::=               ENUMERATED {
                                        fc0, fc1, fc2, fc3, fc4, fc5,
                                        fc6, fc7, fc8, fc9, fc11, fc13,
                                        fc15, fc17, fc19, spare1 }

FineSFN-SFN ::=                     ENUMERATED {
                                        fs0, fs0-25, fs0-5, fs0-75 }

ForbiddenAffectCell ::=             CHOICE {
    fdd                                 PrimaryCPICH-Info,
    tdd                                 PrimaryCCPCH-Info
}

ForbiddenAffectCellList ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell

FreqQualityEstimateQuantity-FDD ::= ENUMERATED {
                                        cpich-Ec-N0,
                                        cpich-RSCP }

FreqQualityEstimateQuantity-TDD ::= ENUMERATED {
                                        primaryCCPCH-RSCP }

GPS-MeasurementParam ::=            SEQUENCE {
    satelliteID                         INTEGER (0..63),
    c-N0                                INTEGER (0..63),
    doppler                             INTEGER (-32768..32768),
    wholeGPS-Chips                      INTEGER (0..1023),
    fractionalGPS-Chips                 INTEGER (0..1023),
    multipathIndicator                  MultipathIndicator,
    pseudorangeRMS-Error                INTEGER (0..63)
}

GPS-MeasurementParamList ::=        SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-MeasurementParam

GSM-CarrierRSSI ::=                 BIT STRING (SIZE (6))


GSM-MeasuredResults ::=             SEQUENCE {
    gsm-CarrierRSSI                     GSM-CarrierRSSI                     OPTIONAL,
```

```
    pathloss                            Pathloss                            OPTIONAL,
    bsicReported                        BSICReported,
    observedTimeDifferenceToGSM         ObservedTimeDifferenceToGSM         OPTIONAL
}

GSM-MeasuredResultsList ::=         SEQUENCE (SIZE (1..maxReportedGSMCells)) OF
                                        GSM-MeasuredResults

-- **TODO**, not defined yet
GSM-OutputPower ::=                 SEQUENCE {
}

GPS-TOW-1msec ::=                   INTEGER (0..604799999)

~~GPS-TOW-1usec ::=                   SEQUENCE {~~
~~    tow-1msec                           GPS-TOW-1msec,~~
~~    tow-rem-usec                        GPS-TOW-rem-usec~~
~~}~~

GPS-TOW-Assist ::=                  SEQUENCE {
    satID                               SatID,
    tlm-Message                         BIT STRING (SIZE (14)),
    tlm-Reserved                        BIT STRING (SIZE (2)),
    antiSpoof                           BOOLEAN,
    alert                               BOOLEAN~~,~~
~~    tlm-Reserved                        BIT STRING (SIZE (2))~~
}

GPS-TOW-AssistList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-TOW-Assist

GPS-TOW-rem-usec ::=                INTEGER (0..999)

HCS-CellReselectInformation-RSCP ::=        SEQUENCE {
    penaltyTime                                 PenaltyTime-RSCP
    -- TABULAR: The default value is "notUsed", temporary offset is nested inside PenaltyTime
}

HCS-CellReselectInformation-ECN0 ::=        SEQUENCE {
    penaltyTime                         PenaltyTime-ECN0
    -- TABULAR: The default value is "notUsed", temporary offset is nested inside PenaltyTime
}

HCS-NeighbouringCellInformation-RSCP ::= SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    hcs-CellReselectInformation         HCS-CellReselectInformation-RSCP
}

HCS-NeighbouringCellInformation-ECN0 ::= SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    hcs-CellReselectInformation         HCS-CellReselectInformation-ECN0
}

HCS-PRIO ::=                        INTEGER (0..7)

HCS-ServingCellInformation ::=      SEQUENCE {
    hcs-PRIO                            HCS-PRIO                            DEFAULT 0,
    q-HCS                               Q-HCS                               DEFAULT 0,
    t-CR-Max                            T-CRMax                             OPTIONAL
}

-- Actual value = IE value * 0.5
Hysteresis ::=                      INTEGER (0..15)

-- Actual value = IE value * 0.5
HysteresisInterFreq ::=             INTEGER (0..29)

InterFreqCell ::=                   SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults
}

InterFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

InterFreqCellInfoList ::=           SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList                OPTIONAL
}

InterFreqCellInfoSI-List-RSCP ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
```

```
    newInterFreqCellList                NewInterFreqCellSI-List-RSCP        OPTIONAL
}

InterFreqCellInfoSI-List-ECN0 ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-ECN0        OPTIONAL
}

InterFreqCellInfoSI-List-HCS-RSCP ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-RSCP    OPTIONAL
}
InterFreqCellInfoSI-List-HCS-ECN0 ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-ECN0    OPTIONAL
}

InterFreqCellList ::=               SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqCell

InterFreqCellMeasuredResultsList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellMeasuredResults

InterFreqEvent ::=                  CHOICE {
    event2a                             Event2a,
    event2b                             Event2b,
    event2c                             Event2c,
    event2d                             Event2d,
    event2e                             Event2e,
    event2f                             Event2f
}

InterFreqEventList ::=              SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        InterFreqEvent


InterFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList                   OPTIONAL
}


InterFreqMeasQuantity ::=           SEQUENCE {
    reportingCriteria                   CHOICE {
        intraFreqReportingCriteria          SEQUENCE {
            intraFreqMeasQuantity               IntraFreqMeasQuantity
        },
        interFreqReportingCriteria          SEQUENCE {
            filterCoefficient                   FilterCoefficient           DEFAULT fc0,
            modeSpecificInfo                    CHOICE {
                fdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-FDD     FreqQualityEstimateQuantity-FDD
                },
                tdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-TDD     FreqQualityEstimateQuantity-TDD
                }
            }
        }
    }
}

InterFreqMeasuredResults ::=        SEQUENCE {
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    utra-CarrierRSSI                    UTRA-CarrierRSSI                    OPTIONAL,
    interFreqCellMeasuredResultsList    InterFreqCellMeasuredResultsList    OPTIONAL
}

InterFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqMeasuredResults


InterFreqMeasurementSysInfo-RSCP ::=    SEQUENCE {
    interFreqCellInfoSI-List                InterFreqCellInfoSI-List-RSCP       OPTIONAL
}

InterFreqMeasurementSysInfo-ECN0 ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-ECN0       OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-RSCP ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-RSCP   OPTIONAL
}
```

```
InterFreqMeasurementSysInfo-HCS-ECN0 ::=        SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-ECN0   OPTIONAL
}

InterFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    interFreqReportingCriteria          InterFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterFreqReportingCriteria ::=      SEQUENCE {
    interFreqEventList                  InterFreqEventList                  OPTIONAL
}

InterFreqReportingQuantity ::=      SEQUENCE {
    utra-Carrier-RSSI                   BOOLEAN,
    frequencyQualityEstimate            BOOLEAN,
    nonFreqRelatedQuantities            CellReportingQuantities
}

InterFrequencyMeasurement ::=       SEQUENCE {
    interFreqCellInfoList               InterFreqCellInfoList,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingQuantity          InterFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    interFreqSetUpdate                  UE-AutonomousUpdateMode             OPTIONAL,
    reportCriteria                      InterFreqReportCriteria
}
InterRAT-TargetCellDescription::=   SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            ncMode                              NC-Mode             OPTIONAL
        },
        is-2000                             NULL,
        spare                               NULL
    }
}

InterRATCellID ::=              INTEGER (0..maxCellMeas-1)

InterRATCellInfoList ::=            SEQUENCE {
    removedInterRATCellList         RemovedInterRATCellList,
    newInterRATCellList             NewInterRATCellList
}

InterRATCellInfoList-HCS ::=            SEQUENCE {
    removedInterRATCellList         RemovedInterRATCellList,
    newInterRATCellList             NewInterRATCellList-HCS
}

InterRATEvent ::=               CHOICE {
    event3a                             Event3a,
    event3b                             Event3b,
    event3c                             Event3c,
    event3d                             Event3d
}

InterRATEventList ::=           SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        InterRATEvent

InterRATEventResults ::=            SEQUENCE {
    eventID                             EventIDInterRAT,
    cellToReportList                    CellToReportList
}

InterRATInfo ::=                    ENUMERATED {
                                        gsm }

InterRATMeasQuantity ::=                SEQUENCE {
    measQuantityUTRAN-QualityEstimate       IntraFreqMeasQuantity           OPTIONAL,
    ratSpecificInfo                     CHOICE {
        gsm                                     SEQUENCE {
            measurementQuantity                     MeasurementQuantityGSM,
            filterCoefficient                       FilterCoefficient       DEFAULT fc1,
            bsic-VerificationRequired               BSIC-VerificationRequired
        },
        is-2000                                 SEQUENCE {
            tadd-EcIo                               INTEGER (0..63),
            tcomp-EcIo                              INTEGER (0..15),
            softSlope                               INTEGER (0..63)         OPTIONAL,
```

```
            addIntercept                            INTEGER (0..63)         OPTIONAL
        }
    }
}

InterRATMeasuredResults ::=     CHOICE {
    gsm                                 GSM-MeasuredResultsList,
    spare                               NULL
}

InterRATMeasuredResultsList ::= SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                        InterRATMeasuredResults

InterRATMeasurement ::=         SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList                OPTIONAL,
    interRATMeasQuantity                InterRATMeasQuantity                OPTIONAL,
    interRATReportingQuantity           InterRATReportingQuantity       OPTIONAL,
    reportCriteria                      InterRATReportCriteria
}

InterRATMeasurementSysInfo ::=  SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList                OPTIONAL
}

InterRATMeasurementSysInfo-HCS ::=  SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList-HCS            OPTIONAL
}

InterRATReportCriteria ::=      CHOICE {
    interRATReportingCriteria           InterRATReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterRATReportingCriteria ::=   SEQUENCE {
    interRATEventList               InterRATEventList               OPTIONAL
}

InterRATReportingQuantity ::=   SEQUENCE {
    utran-EstimatedQuality              BOOLEAN,
    ratSpecificInfo                 CHOICE {
        gsm                                 SEQUENCE {
            pathloss                            BOOLEAN,
            observedTimeDifferenceGSM           BOOLEAN,
            gsm-Carrier-RSSI                    BOOLEAN
        }
    }
}

IntraFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

IntraFreqCellInfoList ::=           SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList                OPTIONAL
}

IntraFreqCellInfoSI-List-RSCP ::=   SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-RSCP
}

IntraFreqCellInfoSI-List-ECN0 ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-ECN0
}

IntraFreqCellInfoSI-List-HCS-RSCP ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-RSCP
}

IntraFreqCellInfoSI-List-HCS-ECN0 ::=       SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-ECN0
}

IntraFreqEvent ::=                  CHOICE {
    e1a                                 Event1a,
    e1b                                 Event1b,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
```

```
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEventCriteria ::=          SEQUENCE {
    event                               IntraFreqEvent,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteriaList ::=      SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria

IntraFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDIntraFreq,
    cellMeasurementEventResults         CellMeasurementEventResults
}

IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT fc1,
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
            intraFreqMeasQuantity-FDD       IntraFreqMeasQuantity-FDD
        },
        tdd                             SEQUENCE {
            intraFreqMeasQuantity-TDDList   IntraFreqMeasQuantity-TDDList
        }
    }
}

IntraFreqMeasQuantity-FDD ::=       ENUMERATED {
                                        cpich-Ec-NO,
                                        cpich-RSCP,
                                        pathloss,
                                        utra-CarrierRSSI }

IntraFreqMeasQuantity-TDD ::=       ENUMERATED {
                                        primaryCCPCH-RSCP,
                                        pathloss,
                                        timeslotISCP,
                                        utra-CarrierRSSI }

IntraFreqMeasQuantity-TDDList ::=   SEQUENCE (SIZE (1..4)) OF
                                        IntraFreqMeasQuantity-TDD

IntraFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        CellMeasuredResults

IntraFreqMeasurementSysInfo-RSCP ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-RSCP       OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-ECN0 ::=        SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-ECN0       OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-RSCP ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-RSCP   OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-ECN0 ::=    SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-ECN0   OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
```

```
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

IntraFreqReportingCriteria ::=      SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList      OPTIONAL
}

IntraFreqReportingQuantity ::=      SEQUENCE {
    activeSetReportingQuantities        CellReportingQuantities,
    monitoredSetReportingQuantities     CellReportingQuantities,
    detectedSetReportingQuantities      CellReportingQuantities             OPTIONAL
}

IntraFreqReportingQuantityForRACH ::= SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-FDD        IntraFreqRepQuantityRACH-FDD
        },
        tdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-TDDList    IntraFreqRepQuantityRACH-TDDList
        }
    }
}

IntraFreqRepQuantityRACH-FDD ::=    ENUMERATED {
                                        cpich-EcN0, cpich-RSCP,
                                        pathloss, noReport }

IntraFreqRepQuantityRACH-TDD ::=    ENUMERATED {
                                        timeslotISCP,
                                        primaryCCPCH-RSCP,
                                        noReport }

IntraFreqRepQuantityRACH-TDDList ::= SEQUENCE (SIZE (1..2)) OF
                                        IntraFreqRepQuantityRACH-TDD

IntraFrequencyMeasurement ::=       SEQUENCE {
    intraFreqCellInfoList               IntraFreqCellInfoList               OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantity          IntraFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      IntraFreqReportCriteria             OPTIONAL
}

IODE ::=                            INTEGER (0..255)

IP-Length ::=                       ENUMERATED {
                                        ipl5, ipl10 }

IP-Spacing ::=                      ENUMERATED {
                                        e5, e7, e10, e15, e20,
                                        e30, e40, e50 }

IS-2000SpecificMeasInfo ::=         ENUMERATED {
                                        frequency, timeslot, colourcode,
                                        outputpower, pn-Offset }

MaxNumberOfReportingCellsType1 ::=  ENUMERATED {
                                        e1, e2, e3, e4, e5, e6}

MaxNumberOfReportingCellsType2 ::=  ENUMERATED {
                                        e1, e2, e3, e4, e5, e6, e7, e8, e9, e10, e11, e12}

MaxNumberOfReportingCellsType3 ::=  ENUMERATED {
                                        viactCellsPlus1,
                                        viactCellsPlus2,
                                        viactCellsPlus3,
                                        viactCellsPlus4,
                                        viactCellsPlus5,
                                        viactCellsPlus6 }

MaxReportedCellsOnRACH ::=          ENUMERATED {
                                        noReport,
                                        currentCell,
                                        currentAnd-1-BestNeighbour,
                                        currentAnd-2-BestNeighbour,
```

```
                                        currentAnd-3-BestNeighbour,
                                        currentAnd-4-BestNeighbour,
                                        currentAnd-5-BestNeighbour,
                                        currentAnd-6-BestNeighbour }

MeasuredResults ::=                 CHOICE {
    intraFreqMeasuredResultsList        IntraFreqMeasuredResultsList,
    interFreqMeasuredResultsList        InterFreqMeasuredResultsList,
    interRATMeasuredResultsList     InterRATMeasuredResultsList,
    trafficVolumeMeasuredResultsList    TrafficVolumeMeasuredResultsList,
    qualityMeasuredResults              QualityMeasuredResults,
    ue-InternalMeasuredResults          UE-InternalMeasuredResults,
    up-MeasuredResults                  UP-MeasuredResults
}

MeasuredResultsList ::=             SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults

MeasuredResultsOnRACH ::=           SEQUENCE {
    currentCell                         SEQUENCE {
        modeSpecificInfo                    CHOICE {
            fdd                                 SEQUENCE {
                measurementQuantity                 CHOICE {
                    cpich-Ec-N0                         CPICH-Ec-N0,
                    cpich-RSCP                          CPICH-RSCP,
                    pathloss                            Pathloss
                }
            },
            tdd                                 SEQUENCE {
                timeslotISCP                        TimeslotISCP-List       OPTIONAL,
                primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP       OPTIONAL
            }
        }
    },
    monitoredCells                      MonitoredCellRACH-List              OPTIONAL
}

MeasurementCommand ::=              CHOICE {
    setup                               MeasurementType,
    modify                              SEQUENCE {
        measurementType                     MeasurementType                 OPTIONAL
    },
    release                             NULL
}

MeasurementControlSysInfo ::=       SEQUENCE {
    use-of-HCS                          CHOICE  {
        hcs-not-used                    SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-RSCP
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-RSCP    OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-ECN0
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-ECN0    OPTIONAL
                }
            },
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo-HCS      OPTIONAL
        },
        hcs-used                        SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-HCS-RSCP
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-HCS-RSCP
    OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-HCS-ECN0
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-HCS-ECN0
    OPTIONAL                }
            },
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo      OPTIONAL
        }
    },

    trafficVolumeMeasSysInfo            TrafficVolumeMeasSysInfo            OPTIONAL,
    ue-InternalMeasurementSysInfo       UE-InternalMeasurementSysInfo       OPTIONAL
}
```

```
MeasurementIdentity ::=     INTEGER (1..16)

MeasurementQuantityGSM ::=          ENUMERATED {
                                        gsm-CarrierRSSI,
                                        pathloss }

MeasurementReportingMode ::=        SEQUENCE {
    measurementReportTransferMode       TransferMode,
    periodicalOrEventTrigger            PeriodicalOrEventTrigger
}

MeasurementType ::=                 CHOICE {
    intraFrequencyMeasurement           IntraFrequencyMeasurement,
    interFrequencyMeasurement           InterFrequencyMeasurement,
    interRATMeasurement             InterRATMeasurement,
    up-Measurement                      UP-Measurement,
    trafficVolumeMeasurement            TrafficVolumeMeasurement,
    qualityMeasurement                  QualityMeasurement,
    ue-InternalMeasurement              UE-InternalMeasurement
}

MeasurementValidity ::=             SEQUENCE {
    ue-State                            ENUMERATED {
                                            cell-DCH, all-But-Cell-DCH, all-States }
}

MonitoredCellRACH-List ::=          SEQUENCE (SIZE (1..7)) OF
                                        MonitoredCellRACH-Result

MonitoredCellRACH-Result ::=        SEQUENCE {
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            measurementQuantity                 CHOICE {
                cpich-Ec-N0                         CPICH-Ec-N0,
                cpich-RSCP                          CPICH-RSCP,
                pathloss                            Pathloss
            }                                                                   OPTIONAL
        },
        tdd                                 SEQUENCE {
            cellParametersID                    CellParametersID,
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP
        }
    }
}

MultipathIndicator ::=              ENUMERATED {
                                        nm,
                                        low,
                                        medium,
                                        high }

N-CR-T-CRMaxHyst ::=                SEQUENCE {
    n-CR                                INTEGER (1..16)                     DEFAULT 8,
    t-CRMaxHyst                         T-CRMaxHyst
}

NavigationModelSatInfo ::=          SEQUENCE {
    satID                               SatID,
    satelliteStatus                     SatelliteStatus,
    navModel                            NavModel        OPTIONAL
}

NavigationModelSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        NavigationModelSatInfo

NavModel ::=                        SEQUENCE {
    codeOnL2                            BIT STRING (SIZE (2)),
    uraIndex                            BIT STRING (SIZE (4)),
    satHealth                           BIT STRING (SIZE (6)),
    iodc                                BIT STRING (SIZE (10)),
    l2Pflag                             BIT STRING (SIZE (1)),
    sf1Revd                             SubFrame1Reserved,
    t-GD                                BIT STRING (SIZE (8)),
    t-oc                                BIT STRING (SIZE (16)),
    af2                                 BIT STRING (SIZE (8)),
    af1                                 BIT STRING (SIZE (16)),
    af0                                 BIT STRING (SIZE (22)),
    c-rs                                BIT STRING (SIZE (16)),
    delta-n                             BIT STRING (SIZE (16)),
    m0                                  BIT STRING (SIZE (32)),
```

```
    c-uc                                BIT STRING (SIZE (16)),
    e                                   BIT STRING (SIZE (32)),
    c-us                                BIT STRING (SIZE (16)),
    a-Sqrt                              BIT STRING (SIZE (32)),
    t-oe                                BIT STRING (SIZE (16)),
    fitInterval                         BIT STRING (SIZE (1)),
    aodo                                BIT STRING (SIZE (5)),
    c-ic                                BIT STRING (SIZE (16)),
    omega0                              BIT STRING (SIZE (32)),
    c-is                                BIT STRING (SIZE (16)),
    i0                                  BIT STRING (SIZE (32)),
    c-rc                                BIT STRING (SIZE (16)),
    omega                               BIT STRING (SIZE (32)),
    omegaDot                            BIT STRING (SIZE (24)),
    iDot                                BIT STRING (SIZE (14))
}
NC-Mode::=                          BIT STRING (SIZE (3))

Neighbour ::=                       SEQUENCE {
    ModeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
        neighbourIdentity                   PrimaryCPICH-Info                   OPTIONAL
        },
        tdd                             SRQUENCE {
        neighbourAndChannelIdentity     CellAndChannelIdentity                  OPTIONAL,
        }
    neighbourQuantity                   NeighbourQuantity,
    sfn-SFN-ObsTimeDifference2          SFN-SFN-ObsTimeDifference2,
    uE-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2            OPTIONAL
}

NeighbourList ::=                   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        Neighbour

-- **TODO**, to be defined fully
NeighbourQuantity ::=               SEQUENCE {
}

NewInterFreqCell ::=                SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfo
}

NewInterFreqCellList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCell

NewInterFreqCellSI-RSCP ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-RSCP
}

NewInterFreqCellSI-ECN0 ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-ECN0
}

NewInterFreqCellSI-HCS-RSCP ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-HCS-RSCP
}

NewInterFreqCellSI-HCS-ECN0 ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-HCS-ECN0
}

NewInterFreqCellSI-List-ECN0 ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-ECN0

NewInterFreqCellSI-List-HCS-RSCP ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-HCS-RSCP

NewInterFreqCellSI-List-HCS-ECN0 ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-HCS-ECN0

NewInterFreqCellSI-List-RSCP ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-RSCP
```

```
NewInterRATCell ::=              SEQUENCE {
    interRATCellID                      InterRATCellID          OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPower                     GSM-OutputPower             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare1                              NULL,
        spare2                              NULL
    }
}

NewInterRATCell-HCS ::=              SEQUENCE {
    interRATCellID                      InterRATCellID              OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPower                     GSM-OutputPower             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare1                              NULL,
        spare2                              NULL
    }
}

NewInterRATCellList ::=          SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterRATCell

NewInterRATCellList-HCS ::=          SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterRATCell-HCS

NewIntraFreqCell ::=                 SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfo
}

NewIntraFreqCellList ::=             SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCell

NewIntraFreqCellSI-RSCP ::=             SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-RSCP
}

NewIntraFreqCellSI-ECN0 ::=          SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-ECN0
}
NewIntraFreqCellSI-HCS-RSCP ::=      SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-HCS-RSCP
}

NewIntraFreqCellSI-HCS-ECN0 ::=      SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-HCS-ECN0
}

NewIntraFreqCellSI-List-RSCP ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            NewIntraFreqCellSI-RSCP

NewIntraFreqCellSI-List-ECN0 ::=        SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCellSI-ECN0

NewIntraFreqCellSI-List-HCS-RSCP ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCellSI-HCS-RSCP

NewIntraFreqCellSI-List-HCS-ECN0 ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCellSI-HCS-ECN0

NodeB-ClockDrift ::=                 INTEGER (0..15)

NonUsedFreqParameter ::=             SEQUENCE {
    nonUsedFreqThreshold                Threshold,
```

```
	nonUsedFreqW						W
}

NonUsedFreqParameterList ::=		SEQUENCE (SIZE (1..maxFreq)) OF
										NonUsedFreqParameter

ObservedTimeDifferenceToGSM ::=		INTEGER (0..4095)

OTDOA-SearchWindowSize ::=			ENUMERATED {
										c10, c20, c30, c40, c50,
										c60, c70, moreThan70 }

Pathloss ::=						INTEGER (46..158)

PenaltyTime-RSCP ::=				CHOICE {
	notUsed								NULL,
	pt10								TemporaryOffset,
	pt20								TemporaryOffset,
	pt30								TemporaryOffset,
	pt40								TemporaryOffset,
	pt50								TemporaryOffset,
	pt60								TemporaryOffset
}

PenaltyTime-ECN0 ::=				CHOICE {
	notUsed								NULL,
	pt10								TemporaryOffsetList,
	pt20								TemporaryOffsetList,
	pt30								TemporaryOffsetList,
	pt40								TemporaryOffsetList,
	pt50								TemporaryOffsetList,
	pt60								TemporaryOffsetList
}

PendingTimeAfterTrigger ::=			ENUMERATED {
										ptat0-25, ptat0-5, ptat1,
										ptat2, ptat4, ptat8, ptat16 }

PeriodicalOrEventTrigger ::=		ENUMERATED {
										periodical,
										eventTrigger }

PeriodicalReportingCriteria ::=		SEQUENCE {
	reportingAmount						ReportingAmount				DEFAULT ra-Infinity,
	reportingInterval					ReportingIntervalLong
}

PeriodicalWithReportingCellStatus ::= SEQUENCE {
	periodicalReportingCriteria			PeriodicalReportingCriteria,
	reportingCellStatus					ReportingCellStatus				OPTIONAL
}

PositionEstimate ::=				CHOICE {
	ellipsoidPoint						EllipsoidPoint,
	ellipsoidPointUncertCircle			EllipsoidPointUncertCircle,
	ellipsoidPointUncertEllipse			EllipsoidPointUncertEllipse,
	ellipsoidPointAltitude				EllipsoidPointAltitude,
	ellipsoidPointAltitudeEllipse		EllipsoidPointAltitudeEllipsoide
}

PositioningMethod ::=				ENUMERATED {
										otdoa,
										gps,
										otdoaOrGPS }

PRC ::=								INTEGER (-2047..2047)


PrimaryCCPCH-RSCP ::=				INTEGER (-115..-25)

Q-HCS ::=							INTEGER (0..99)

Q-OffsetS-N ::=						INTEGER (-50..50)

Q-QualMin ::=						INTEGER (-20..0)

-- Actual value = (IE value * 2) + 1
Q-RxlevMin ::=						INTEGER (-58..-13)

QualityEventResults ::=				SEQUENCE (SIZE (1..maxTrCH)) OF
										TransportChannelIdentity

QualityMeasuredResults ::=			SEQUENCE {
```

```
    blerMeasurementResultsList          BLER-MeasurementResultsList         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            sir-MeasurementResults              SIR-MeasurementList         OPTIONAL
        }
    }
}

QualityMeasurement ::=              SEQUENCE {
    qualityReportingQuantity            QualityReportingQuantity            OPTIONAL,
    reportCriteria                      QualityReportCriteria
}

QualityReportCriteria ::=           CHOICE {
    qualityReportingCriteria            QualityReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

QualityReportingCriteria ::=        SEQUENCE (SIZE (1..maxTrCH)) OF
                                        QualityReportingCriteriaSingle

QualityReportingCriteriaSingle ::=  SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    totalCRC                            INTEGER (1..512),
    badCRC                              INTEGER (1..512),
    pendingAfterTrigger                 INTEGER (1..512)
}

QualityReportingQuantity ::=        SEQUENCE {
    dl-TransChBLER                      BOOLEAN,
    bler-dl-TransChIdList               BLER-TransChIdList                  OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            sir-TFCS-List                       SIR-TFCS-List               OPTIONAL
        }
    }
}

QualityType ::=                     ENUMERATED {
                                        std-10, std-50, cpich-Ec-N0 }

RAT-Type ::=                        ENUMERATED {
                                        gsm, is2000 }

ReferenceCellPosition ::=           CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointWithAltitude          EllipsoidPointAltitude
}

ReferenceCellRelation ::=           ENUMERATED {
                                        first-12-second-3,
                                        first-13-second-2,
                                        first-1-second-23 }

-- As defined in 23.032 (2D with 24bits for each coordinate3D with uncertainty)
ReferenceLocationforSIB ::=         SEQUENCE {
    ellipsoidPoint                      EllipsoidPoint
    ellipsoidPointAltitudeEllipsoid     EllipsoidPointAltitudeEllipsoid
}

ReferenceQuality ::=                ENUMERATED {
                                        m0-19, m20-39, m40-79,
                                        m80-159, m160-319, m320-639,
                                        m640-1319, m1320Plus }

-- Actual value = IE value * 10
ReferenceQuality10 ::=              INTEGER (1..32)

-- Actual value = IE value * 50
ReferenceQuality50 ::=              INTEGER (1..32)

ReferenceSFN ::=                    INTEGER (0..4095)

-- Actual value = IE value * 512
ReferenceTimeDifferenceToCell ::=   CHOICE {
    -- Actual value = IE value * 40
    accuracy40                          INTEGER (0..960),
    -- Actual value = IE value * 256
    accuracy256                         INTEGER (0..150),
    -- Actual value = IE value * 2560
```

```
    accuracy2560                        INTEGER (0..15)
}

RemovedInterFreqCellList ::=        CHOICE {
    removeAllInterFreqCells             NULL,
    removeSomeInterFreqCells            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            InterFreqCellID,
    removeNoInterFreqCells              NULL
}

RemovedInterRATCellList ::=     CHOICE {
    removeAllInterRATCells          NULL,
    removeSomeInterRATCells         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            InterRATCellID,
    removeNoInterRATCells           NULL
}

RemovedIntraFreqCellList ::=        CHOICE {
    removeAllIntraFreqCells             NULL,
    removeSomeIntraFreqCells            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            IntraFreqCellID,
    removeNoIntraFreqCells              NULL
}

ReplacementActivationThreshold ::=  ENUMERATED {
                                        notApplicable, t1, t2,
                                        t3, t4, t5, t6, t7 }

ReportDeactivationThreshold ::=     ENUMERATED {
                                        notApplicable, t1, t2,
                                        t3, t4, t5, t6, t7 }

ReportingAmount ::=                 ENUMERATED {
                                        ra1, ra2, ra4, ra8, ra16, ra32,
                                        ra64, ra-Infinity }

ReportingCellStatus ::=             CHOICE{
    withinActiveSet                     MaxNumberOfReportingCellsType1,
    withinMonitoredSetUsedFreq          MaxNumberOfReportingCellsType1,
    withinActiveAndOrMonitoredUsedFreq  MaxNumberOfReportingCellsType1,
    withinDetectedSetUsedFreq           MaxNumberOfReportingCellsType1,
    withinMonitoredAndOrDetectedUsedFreq
                                        MaxNumberOfReportingCellsType1,
    allActiveplusMonitoredSet           MaxNumberOfReportingCellsType3,
    allActivePlusDetectedSet            MaxNumberOfReportingCellsType3,
    allActivePlusMonitoredAndOrDetectedSet
                                        MaxNumberOfReportingCellsType3,
    withinVirtualActSet             MaxNumberOfReportingCellsType1,
    withinMonitoredSetNonUsedFreq       MaxNumberOfReportingCellsType1,
    withinMonitoredAndOrActiveSetNonUsedFreq
                                        MaxNumberOfReportingCellsType1,
    allVirtualActSetplusMonitoredSetNonUsedFreq
                                        MaxNumberOfReportingCellsType3,
    withinActSetOrVirtualActSet         MaxNumberOfReportingCellsType2,
    withinActSetAndOrMonitoredUsedFreqOrMonitoredNonUsedFreq
                                        MaxNumberOfReportingCellsType2
}

ReportingCellStatusOpt ::=          SEQUENCE {
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}


ReportingInfoForCellDCH ::=         SEQUENCE {
    intraFreqReportingQuantity          IntraFreqReportingQuantity,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteria                      CellDCH-ReportCriteria
}

ReportingInterval ::=               ENUMERATED {
                                        noPeriodicalreporting, ri0-25,
                                        ri0-5, ri1, ri2, ri4, ri8, ri16 }

ReportingIntervalLong ::=           ENUMERATED {
                                        ril0, ril0-25, ril0-5, ril1,
                                        ril2, ril3, ril4, ril6, ril8,
                                        ril12, ril16, ril20, ril24,
                                        ril28, ril32, ril64 }

-- Actual value = IE value * 0.5
ReportingRange ::=                  INTEGER (0..29)

RL-AdditionInfoList ::=             SEQUENCE (SIZE (1..maxRL)) OF
```

```
                                            PrimaryCPICH-Info

RL-InformationLists ::=             SEQUENCE {
    rl-AdditionInfoList                 RL-AdditionInfoList                 OPTIONAL,
    rl-RemovalInfoList                  RL-RemovalInfoList                  OPTIONAL
}

RL-RemovalInfoList ::=              SEQUENCE (SIZE (1..maxRL)) OF
                                        PrimaryCPICH-Info

RLC-BuffersPayload ::=              ENUMERATED {
                                        pl0, pl4, pl8, pl16, pl32, pl64, pl128,
                                        pl256, pl512, pl1024, pl2k, pl4k,
                                        pl8k, pl16k, pl32k, pl64k, pl128k,
                                        pl256k, pl512k, pl1024k }

RRC ::=                             INTEGER (-127..127)

SatData ::=                         SEQUENCE{
    satID                               SatID,
    iode                                IODE
}

SatDataList ::=                     SEQUENCE (Size (0..maxSat)) OF
                                        SatData

SatelliteStatus ::=                 ENUMERATED {
                                        ns-NN-U,
                                        es-SN,
                                        es-NN-U,
                                        revd~~es-NN-C ~~}

SatID ::=                           INTEGER (0..63)

SFN-SFN-ObsTimeDifference ::=       CHOICE {
    type1                               SFN-SFN-ObsTimeDifference1,
    -- Actual value for type2 = IE value * 0.0625 - 1280
    type2                               SFN-SFN-ObsTimeDifference2
}

SFN-SFN-ObsTimeDifference1 ::=      INTEGER (0..9830399)

SFN-SFN-ObsTimeDifference2 ::=      INTEGER (0..40961)

SFN-SFN-OTD-Type ::=                ENUMERATED {
                                        noReport,
                                        type1,
                                        type2 }

SFN-SFN-RelTimeDifference1 ::=      INTEGER (0..9830399)

SFN-TOW-Uncertainty                 ENUMERATED {
                                        lessThan10,
                                        moreThan10 }

SIR ::=                             INTEGER (-10..20)


SIR-MeasurementList ::=             SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        SIR-MeasurementResults


SIR-MeasurementResults ::=          SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain,
    sir-TimeslotList                    SIR-TimeslotList
}

SIR-TFCS ::=                        TFCS-IdentityPlain


SIR-TFCS-List ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        SIR-TFCS

SIR-TimeslotList ::=                SEQUENCE (SIZE (1..maxTS)) OF
                                        SIR

-- Reserved bits in subframe 1 of the GPS navigation message
SubFrame1Reserved ::=               SEQUENCE {
    reserved1                           BIT STRING (SIZE (23)),
    reserved2                           BIT STRING (SIZE (24)),
    reserved3                           BIT STRING (SIZE (24)),
    reserved4                           BIT STRING (SIZE (16))
}
```

```
T-CRMax ::=                     CHOICE {
    notUsed                         NULL,
    t30                             N-CR-T-CRMaxHyst,
    t60                             N-CR-T-CRMaxHyst,
    t120                            N-CR-T-CRMaxHyst,
    t180                            N-CR-T-CRMaxHyst,
    t240                            N-CR-T-CRMaxHyst
}

T-CRMaxHyst ::=                 ENUMERATED {
                                    notUsed, t10, t20, t30,
                                    t40, t50, t60, t70 }

TemporaryOffset ::=             ENUMERATED {
                                    to10, to20, to30, to40, to50,
                                    to60, to70, infinite }

TemporaryOffsetList ::=         SEQUENCE    {
        temporaryOffset1            TemporaryOffset,
        temporaryOffset2            TemporaryOffset
}

Threshold ::=                   INTEGER (-115..0)

ThresholdPositionChange ::=     ENUMERATED {
                                    pc10, pc20, pc30, pc40, pc50,
                                    pc100, pc200, pc300, pc500,
                                    pc1000, pc2000, pc5000, pc10000,
                                    pc20000, pc50000, pc100000 }

ThresholdSFN-GPS-TOW ::=        ENUMERATED {
                                    ms1, ms2, ms3, ms5, ms10,
                                    ms20, ms50, ms100 }

ThresholdSFN-SFN-Change ::=     ENUMERATED {
                                    c0-25, c0-5, c1, c2, c3, c4, c5,
                                    c10, c20, c50, c100, c200, c500,
                                    c1000, c2000, c5000 }

ThresholdUsedFrequency ::=      INTEGER (-115..165)


-- Actual value = IE value * 20.
TimeInterval ::=                INTEGER (1..13)


TimeslotInfo ::=                SEQUENCE {
    timeslotNumber                  TimeslotNumber,
    burstType                       BurstType
}

TimeslotInfoList ::=            SEQUENCE (SIZE (1..maxTS)) OF
                                    TimeslotInfo

TimeslotISCP ::=                INTEGER (-115..-25)


TimeslotISCP-List ::=           SEQUENCE (SIZE (1..maxTS)) OF
                                    TimeslotISCP

TimeslotListWithISCP ::=        SEQUENCE (SIZE (1..maxTS)) OF
                                    TimeslotWithISCP

TimeslotWithISCP ::=            SEQUENCE {
    timeslot                        TimeslotNumber,
    timeslotISCP                    TimeslotISCP
}

TimeToTrigger ::=               ENUMERATED {
                                    ttt0, ttt10, ttt20, ttt40, ttt60,
                                    ttt80, ttt100, ttt120, ttt160,
                                    ttt200, ttt240, tt320, ttt640,
                                    ttt1280, ttt2560, ttt5000 }

TrafficVolumeEventParam ::=     SEQUENCE {
    eventID                         TrafficVolumeEventType,
    reportingThreshold              TrafficVolumeThreshold,
    timeToTrigger                   TimeToTrigger                   OPTIONAL,
    pendingTimeAfterTrigger         PendingTimeAfterTrigger         OPTIONAL,
    tx-InterruptionAfterTrigger     TX-InterruptionAfterTrigger     OPTIONAL
}
```

```
TrafficVolumeEventResults ::=       SEQUENCE {
    ul-transportChannelCausingEvent     TransportChannelIdentity,
    trafficVolumeEventIdentity          TrafficVolumeEventType
}

TrafficVolumeEventType ::=          ENUMERATED {
                                        e4a,
                                        e4b }

TrafficVolumeMeasQuantity ::=       CHOICE {
    rlc-BufferPayload                   NULL,
    averageRLC-BufferPayload            TimeInterval,
    varianceOfRLC-BufferPayload         TimeInterval
}

TrafficVolumeMeasSysInfo ::=        SEQUENCE {
    trafficVolumeMeasurementID          MeasurementIdentity         DEFAULT 4,
    trafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    trafficVolumeMeasRepCriteria        TrafficVolumeReportingCriteria      OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteriaSysInf                TrafficVolumeReportCriteriaSysInfo

}

TrafficVolumeMeasuredResults ::=    SEQUENCE {
    rb-Identity                         RB-Identity,
    rlc-BuffersPayload                  RLC-BuffersPayload                  OPTIONAL,
    averageRLC-BufferPayload            AverageRLC-BufferPayload            OPTIONAL,
    varianceOfRLC-BufferPayload         VarianceOfRLC-BufferPayload         OPTIONAL
}

TrafficVolumeMeasuredResultsList ::= SEQUENCE (SIZE (1..maxRB)) OF
                                        TrafficVolumeMeasuredResults

TrafficVolumeMeasurement ::=        SEQUENCE {
    trafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      TrafficVolumeReportCriteria
}

TrafficVolumeMeasurementObjectList ::= SEQUENCE (SIZE (1..maxTrCH)) OF
                                            TransportChannelIdentity

TrafficVolumeReportCriteria ::=     CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

TrafficVolumeReportCriteriaSysInfo ::=  CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    transChCriteriaList                 TransChCriteriaList                 OPTIONAL
}

TrafficVolumeReportingQuantity ::= SEQUENCE {
    rlc-RB-BufferPayload                BOOLEAN,
    rlc-RB-BufferPayloadAverage         BOOLEAN,
    rlc-RB-BufferPayloadVariance        BOOLEAN
}

TrafficVolumeThreshold ::=          ENUMERATED {
                                        th8, th16, th32, th64, th128,
                                        th256, th512, th1024, th2k, th3k,
                                        th4k, th6k, th8k, th12k, th16k,
                                        th24k, th32k, th48k, th64k, th96k,
                                        th128k, th192k, th256k, th384k,
                                        th512k, th768k }

TransChCriteria ::=                 SEQUENCE {
    ul-transportChannelID               TransportChannelIdentity        OPTIONAL,
    eventSpecificParameters             SEQUENCE (SIZE (1..maxMeasParEvent)) OF
                                            TrafficVolumeEventParam         OPTIONAL
}
```

```
TransChCriteriaList ::=         SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransChCriteria

TransferMode ::=                    ENUMERATED {
                                        acknowledgedModeRLC,
                                        unacknowledgedModeRLC }

TransmittedPowerThreshold ::=       INTEGER (-50..33)

TriggeringCondition1 ::=            ENUMERATED {
                                        activeSetCellsOnly,
                                        monitoredSetCellsOnly,
                                        activeSetAndMonitoredSetCells }

TriggeringCondition2 ::=            ENUMERATED {
                                        activeSetCellsOnly,
                                        monitoredSetCellsOnly,
                                        activeSetAndMonitoredSetCells,
                                        detectedSetCellsOnly,
                                        detectedSetAndMonitoredSetCells }

TX-InterruptionAfterTrigger ::=     ENUMERATED {
                                        txiat0-25, txiat0-5, txiat1,
                                        txiat2, txiat4, txiat8, txiat16 }

UDRE ::=                            ENUMERATED {
                                        lessThan1,
                                        between1-and-4,
                                        between4-and-8,
                                        over8 }

UE-6AB-Event ::=                    SEQUENCE {
    timeToTrigger                       TimeToTrigger,
    transmittedPowerThreshold           TransmittedPowerThreshold
}

UE-6FG-Event ::=                    SEQUENCE {
    timeToTrigger                       TimeToTrigger,
    ue-RX-TX-TimeDifferenceThreshold    UE-RX-TX-TimeDifferenceThreshold
}

UE-AutonomousUpdateMode ::=         CHOICE {
    on                                  NULL,
    onWithNoReporting                   NULL,
    off                                 RL-InformationLists
}

UE-InternalEventParam ::=           CHOICE {
    event6a                             UE-6AB-Event,
    event6b                             UE-6AB-Event,
    event6c                             TimeToTrigger,
    event6d                             TimeToTrigger,
    event6e                             TimeToTrigger,
    event6f                             UE-6FG-Event,
    event6g                             UE-6FG-Event
}

UE-InternalEventParamList ::=       SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        UE-InternalEventParam

UE-InternalEventResults ::=         CHOICE {
    event6a                             NULL,
    event6b                             NULL,
    event6c                             NULL,
    event6d                             NULL,
    event6e                             NULL,
    event6f                             PrimaryCPICH-Info,
    event6g                             PrimaryCPICH-Info
}

UE-InternalMeasQuantity ::=         SEQUENCE {
    measurementQuantity                 UE-MeasurementQuantity,
    filterCoefficient                   FilterCoefficient                   DEFAULT fc1
}

UE-InternalMeasuredResults ::=      SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-TransmittedPowerFDD              UE-TransmittedPower         OPTIONAL,
            ue-RX-TX-ReportEntryList            UE-RX-TX-ReportEntryList    OPTIONAL
        },
        tdd                                 SEQUENCE {
            ue-TransmittedPowerTDD-List         UE-TransmittedPowerTDD-List OPTIONAL,
```

```
            appliedTA                           UL-TimingAdvance            OPTIONAL
        }
    }
}

UE-InternalMeasurement ::=          SEQUENCE {
    ue-InternalMeasQuantity             UE-InternalMeasQuantity             OPTIONAL,
    ue-InternalReportingQuantity        UE-InternalReportingQuantity        OPTIONAL,
    reportCriteria                      UE-InternalReportCriteria
}

UE-InternalMeasurementSysInfo ::=   SEQUENCE {
    ue-InternalMeasurementID            MeasurementIdentity         DEFAULT 5,
    ue-InternalMeasQuantity             UE-InternalMeasQuantity
}

UE-InternalReportCriteria ::=       CHOICE {
    ue-InternalReportingCriteria        UE-InternalReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

UE-InternalReportingCriteria ::=    SEQUENCE {
    ue-InternalEventParamList           UE-InternalEventParamList           OPTIONAL
}

UE-InternalReportingQuantity ::=    SEQUENCE {
    ue-TransmittedPower                 BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-RX-TX-TimeDifferece              BOOLEAN
        },
        tdd                                 SEQUENCE {
            appliedTA                           BOOLEAN
        }
    }
}

-- TABULAR: For TDD only the first two values are used.
UE-MeasurementQuantity ::=          ENUMERATED {
                                        ue-TransmittedPower,
                                        utra-Carrier-RSSI,
                                        ue-RX-TX-TimeDifference }

UE-RX-TX-ReportEntry ::=            SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    ue-RX-TX-TimeDifferenceType1        UE-RX-TX-TimeDifferenceType1
}

UE-RX-TX-ReportEntryList ::=        SEQUENCE (SIZE (1..maxRL)) OF
                                        UE-RX-TX-ReportEntry

UE-RX-TX-TimeDifferenceType1 ::=            INTEGER (768..1280)

-- Actual value = IE value * 0.0625 + 768
UE-RX-TX-TimeDifferenceType2 ::=    INTEGER (0..8191)

UE-RX-TX-TimeDifferenceThreshold ::= INTEGER (768..1280)

UE-TransmittedPower ::=             INTEGER (-50..33)

UE-TransmittedPowerTDD-List ::=     SEQUENCE (SIZE (1..maxTS)) OF
                                        UE-TransmittedPower

UP-Accuracy ::=                 BIT STRING (SIZE (7))

--  For sfID=0 (sf4), pageNo=18, and sfID=0 & sfID=1 (sf4 & sf5), pageNo=25,
--  the IE fileds for word3 - word110 are the same as UP-GPS-IonosphericModel
--  and UP-GPS-UTC-Model. For the rest of the pages, they are the same as
--  UP-GPS-Almanac.
UP-Alma-SIB-Data ::=                    SEQUENCE {
    sfID                                INTEGER (0..1),
    dataID                              INTEGER (0..3),
    pageNo                              INTEGER (0..63),
    word3                               BIT STRING (SIZE (16)),
    word4                               BIT STRING (SIZE (24)),
    word5                               BIT STRING (SIZE (24)),
    word6                               BIT STRING (SIZE (24)),
    word7                               BIT STRING (SIZE (24)),
    word8                               BIT STRING (SIZE (24)),
    word9                               BIT STRING (SIZE (24)),
    word10                              BIT STRING (SIZE (22))
}
```

```
UP-Alma-SIB-DataList ::=            SEQUENCE (SIZE (1..3)) OF
                                        UP-Alma-SIB-Data

UP-CipherParameters ::=         SEQUENCE {
    cipheringKeyFlag                    BIT STRING (SIZE (1)),
    cipheringSerialNumber               INTEGER (0..65535)
}

UP-DGPS-SIB-Data ::=                SEQUENCE {
    nodeBClockDrift                     NodeB-ClockDrift                    OPTIONAL,
    referenceLocationforSIB ReferenceLocationforSIB,
    referenceSFN                        ReferenceSFN                        OPTIONAL,
    referenceGPS-TOW                    INTEGER (0..604799)GPS-TOW-1usec,
    statusHealth                        DiffCorrectionStatus,
    dgps-InformationList                DGPS-InformationList
}

UP-Ephe-SIB-Data ::=                SEQUENCE {
    transmissionTOW                 INTEGER (0..1048575),
    up-gps-NavigationModelnavModel  UP-GPS-NavigationModel
    satID                               SatID,
    tlmMessage                          BIT STRING (SIZE (14)),
    tlmRevd                             BIT STRING (SIZE (2)),
    how                                 BIT STRING (SIZE (22)),
    wn                                  BIT STRING (SIZE (10)),
    navModel                            NavModel
}

UP-Error ::=                        SEQUENCE {
    errorReason                                 UP-ErrorCause,
    up-GPS-additionalAssistanceDataRequest      UP-GPS-AdditionalAssistanceDataRequest  OPTIONAL
}

UP-ErrorCause ::=                   ENUMERATED {
                                        notEnoughOTDOA-Cells,
                                        notEnoughGPS-Satellites,
                                        assistanceDataMissing,
                                        methodNotSupported,
                                        undefinedError,
                                        requestDeniedByUser,
                                        notProcessedAndTimeout }

UP-EventID ::=                      ENUMERATED {
                                        e7a, e7b, e7c }

UP-EventParam ::=                   SEQUENCE {
    reportingAmount                     ReportingAmount,
    reportFirstFix                      BOOLEAN,
    measurementInterval                 UP-MeasurementInterval,
    eventSpecificInfo                   UP-EventSpecificInfo
}

UP-EventParamList ::=               SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        UP-EventParam

UP-EventSpecificInfo ::=            CHOICE {
    e7a                                 ThresholdPositionChange,
    e7b                                 ThresholdSFN-SFN-Change,
    e7c                                 ThresholdSFN-GPS-TOW
}

UP-GPS-AcquisitionAssistance ::=    SEQUENCE {
    referenceTime                       CHOICE {
        utran-ReferenceTime                 UTRAN-ReferenceTime,
        gps-ReferenceTimeOnly               INTEGER (0..604799999)
    },
    satelliteInformationList            AcquisitionSatInfoList
}
UP-GPS-AdditionalAssistanceDataRequest ::=      SEQUENCE {
    almanacRequest                      BOOLEAN,
    utcModelRequest                     BOOLEAN,
    ionosphericModelRequest             BOOLEAN,
    navigationModelRequest              BOOLEAN,
    dgpsCorrectionsRequest              BOOLEAN,
    referenceLocationRequest            BOOLEAN,
    referenceTimeRequest                BOOLEAN,
    aquisitionAssistanceRequest         BOOLEAN,
    realTimeIntegrityRequest            BOOLEAN,
    navModelAddDataRequest              UP-GPS-NavModelAddDataReq       OPTIONAL,
}

UP-GPS-Almanac ::=                  SEQUENCE {
```

```
    wn-a                                BIT STRING (SIZE (8)),
    almanacSatInfoList                  AlmanacSatInfoList,
    sv-GlobalHealth                     BIT STRING (SIZE (364))             OPTIONAL
}

UP-GPS-AssistanceData ::=           SEQUENCE {
    up-GPS-ReferenceTime                UP-GPS-ReferenceTime                OPTIONAL,
    up-GPS-ReferenceLocation            ReferenceLocationEllipsoidPointAltitude
    OPTIONAL,
    up-GPS-DGPS-Corrections             UP-GPS-DGPS-Corrections             OPTIONAL,
    up-GPS-NavigationModel              UP-GPS-NavigationModel              OPTIONAL,
    up-GPS-IonosphericModel             UP-GPS-IonosphericModel             OPTIONAL,
    up-GPS-UTC-Model                    UP-GPS-UTC-Model                    OPTIONAL,
    up-GPS-Almanac                      UP-GPS-Almanac                      OPTIONAL,
    up-GPS-AcquisitionAssistance        UP-GPS-AcquisitionAssistance        OPTIONAL,
    up-GPS-Real-timeIntegrity           BadSatList                          OPTIONAL
}

UP-Cipher-GPS-Data-Indicator ::=            SEQUENCE {
    up-CipherParameters             UP-CipherParameters             OPTIONAL
}

UP-GPS-DGPS-Corrections ::=     SEQUENCE {
    gps-TOW                             INTEGER (0..604799),
    statusHealth                        DiffCorrectionStatus,
    dgps-CorrectionSatInfoList          DGPS-CorrectionSatInfoList
}

UP-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))
}

UP-GPS-Measurement ::=              SEQUENCE {
    referenceSFN                        ReferenceSFN                        OPTIONAL,
    gps-TOW-1msec                       GPS-TOW-1msec,
    gps-TOW-rem-usec                    GPS-TOW-rem-usec                    OPTIONAL,
    gps-MeasurementParamList            GPS-MeasurementParamList
}

UP-GPS-NavigationModel ::=          SEQUENCE {
    n-SAT                               INTEGER (1..16),
    navigationModelSatInfoList          NavigationModelSatInfoList
}

UP-GPS-NavModelAddDataReq ::=       SEQUENCE {
    gps-Week                            INTEGER (0..1023),
    gps-Toe                             INTEGER (0..167),
    tToeLimit                           INTEGER (0..10),
    satDataList                         SatDataList
}

UP-GPS-ReferenceTime ::=            SEQUENCE {
    gps-Week                            INTEGER (0..1023),
    gps-tow-1msec                       GPS-TOW-1msec,
    gps-tow-rem-usec                    GPS-TOW-rem-usec                    OPTIONAL,
    gps-TOW                             GPS-TOW-1usec,
    sfn                                 INTEGER (0..4095)                   OPTIONAL,
    sfn-tow-Uncertainty                 SFN-TOW-Uncertainty                 OPTIONAL,
    nodeBClockDrift                     NodeB-ClockDrift                    OPTIONAL,
    gps-TOW-AssistList                  GPS-TOW-AssistList                  OPTIONAL
}

UP-GPS-UTC-Model ::=                SEQUENCE {
    a1                                  BIT STRING (SIZE (24)),
    a0                                  BIT STRING (SIZE (32)),
    t-ot                                BIT STRING (SIZE (8)),
    wn-t                                BIT STRING (SIZE (8)),
    delta-t-LS                          BIT STRING (SIZE (8)),
    wn-lsf                              BIT STRING (SIZE (8)),
    dn                                  BIT STRING (SIZE (8)),
    delta-t-LSF                         BIT STRING (SIZE (8))
}

UP-IPDL-Parameters ::=              SEQUENCE {
    ip-Spacing                          IP-Spacing,
    ip-Length                           IP-Length,
```

```
    ip-Offset                           INTEGER (0..9),
    seed                                INTEGER (0..63),
    burstModeParameters                 BurstModeParameters
}

UP-MeasuredResults ::=              SEQUENCE {
    up-MultipleSets                     UP-MultipleSets                 OPTIONAL,
    up-ReferenceCellIdentity            PrimaryCPICH-Info                   OPTIONAL,
    up-OTDOA-Measurement                UP-OTDOA-Measurement                OPTIONAL,
    up-PositionEstimateInfo                         UP-PositionEstimateInfo
    OPTIONAL,
    up-GPS-Measurement                  UP-GPS-Measurement                  OPTIONAL,
    up-Error                            UP-Error                            OPTIONAL
}

UP-Measurement ::=                  SEQUENCE {
    up-ReportingQuantity                UP-ReportingQuantity,
    reportCriteria                      UP-ReportCriteria,
    up-OTDOA-AssistanceData         UP-OTDOA-AssistanceData         OPTIONAL,
    up-GPS-AssistanceData               UP-GPS-AssistanceData               OPTIONAL
}

UP-MeasurementEventResults ::=      CHOICE {
    event7a                             UP-PositionEstimateInfo,
    event7b                             UP-OTDOA-Measurement,
    event7c                             UP-GPS-Measurement
}

UP-MeasurementInterval ::=          ENUMERATED {
                                        e5, e15, e60, e300,
                                        e900, e1800, e3600, e7200 }

UP-MethodType ::=                   ENUMERATED {
                                        ue-Assisted,
                                        ue-Based,
                                        ue-BasedPreferred,
                                        ue-AssistedPreferred }

UP-MultipleSets ::=             SEQUENCE {
    numberOfOTDOA-IPDL-GPS-Sets         INTEGER (2..3),
    numberOfReferenceCells              INTEGER (1..3),
    referenceCellRelation               ReferenceCellRelation
}

UP-OTDOA-AssistanceData ::=     SEQUENCE {
    up-OTDOA-ReferenceCellInfo              UP-OTDOA-ReferenceCellInfo              OPTIONAL,
    up-OTDOA-MeasurementAssistDataList UP-OTDOA-MeasurementAssistDataList   OPTIONAL,
    up-OTDOA-NeighbourCellList              UP-OTDOA-NeighbourCellList              OPTIONAL
    up-IPDL-Parameters                  UP-IPDL-Parameters                  OPTIONAL
}

UP-OTDOA-AssistanceSIB ::=          SEQUENCE {
    up-CipherParameters                 UP-CipherParameters             OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    referenceCellPosition               ReferenceCellPosition,
    up-IPDL-Parameters                  UP-IPDL-Parameters                  OPTIONAL,
    cellToMeasureInfoList               CellToMeasureInfoList
}

UP-OTDOA-Measurement ::=            SEQUENCE {
    sfn                                 INTEGER (0..4095),
    ue-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2,
    qualityChoice                       CHOICE {
        std-10                              ReferenceQuality10,
        std-50                              ReferenceQuality50,
        cpich-EcN0                          CPICH-Ec-N0-OTDOA,
        defaultQuality                      ReferenceQuality
    },
    neighbourList                       NeighbourList                       OPTIONAL
}

UP-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
}

UP-OTDOA-MeasurementAssistDataList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
```

```
                                        UP-OTDOA-MeasurementAssistData

UP-OTDOA-NeighbourCellInfo  ::= SEQUENCE {
    CHOICE modeSpecificInfo {
        fdd                             SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        }
        tdd                             SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    up-IPDL-Paremeters                  UP-IPDL-Parameters                  OPTIONAL
    sfn-SFN-RelTimeDifference           SFN-SFN-RelTimeDifference1,
    sfn-SFN-Drift                       INTEGER (0..30),
    searchWindowSize                    OTDOA-SearchWindowSize,
    CHOICE PositioningMode {
    ueBased                                 SEQUENCE {
        relativeNorth                       INTEGER (-20000..20000)             OPTIONAL,
        relativeEast                        INTEGER (-20000..20000)             OPTIONAL,
        relativeAltitude                    INTEGER (-4000..4000)               OPTIONAL
        fineSFN-SFN                         FineSFN-SFN                         OPTIONAL,
        roundTripTime                       INTEGER (0..32765)                  OPTIONAL
    }
    ueAssisted                              SEQUENEC {}
}

UP-OTDOA-NeighbourCellList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        UP-OTDOA-NeighbourCellInfo

UP-OTDOA-ReferenceCellInfo ::=          SEQUENCE {
    Sfn                                 SFN                                 OPTIONAL,
    CHOICE modeSpecificInfo {
    fdd                                     SEQUENCE {
        primaryCPICH-Info                   PrimaryCPICH-Info,
    }
    tdd                                     SEQUENCE{
        CellAndChannelIdentity              CellAndChannelIdentity
    }
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    CHOICE positioningMode {
    ueBased                                 SEQUENCE {
    cellPosition                        ReferenceCellPosition               OPTIONAL,
    roundTripTime                       INTEGER (0..32765)                  OPTIONAL
    }
    ueAssited                               SEQUENCE {}
    up-IPDL-Paremeters                      UP-IPDL-Parameters              OPTIONAL
}

UP-PositionEstimateInfo ::=                 SEQUENCE {
    referenceSFN                        ReferenceSFN,
    gps-TOW                             GPS-TOW-1usec,
    gps-tow-1msec                       GPS-TOW-1msec,      OPTIONAL
    gps-tow-rem-usec                    GPS-TOW-rem-usec    OPTIONAL,
    positionEstimate                    PositionEstimate
}

UP-ReportCriteria ::=               CHOICE {
    up-ReportingCriteria                UP-EventParamList,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

UP-ReportingQuantity ::=            SEQUENCE {
    methodType                          UP-MethodType,
    positioningMethod                   PositioningMethod,
    responseTime                        UP-ResponseTime,
    accuracy                            UP-Accuracy                     OPTIONAL,
    gps-TimingOfCellWanted              BOOLEAN,
    multipleSets                        BOOLEAN,
    environmentCharacterisation         EnvironmentCharacterisation         OPTIONAL
}

UP-ResponseTime ::=             ENUMERATED {
                                        s1, s2, s4, s8, s16,
                                        s32, s64, s128 }

UTRA-CarrierRSSI ::=                INTEGER (-95..-30)


UTRAN-ReferenceTime ::=             SEQUENCE {
    gps-TOW                             GPS-TOW-1usec,
    gps-tow-1msec                       GPS-TOW-1msec,
    gps-tow-rem-usec                    GPS-TOW-rem-usec
```

```
    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)

-- ***************************************************
--
--     OTHER INFORMATION ELEMENTS (10.3.8)
--
-- ***************************************************

BCC ::=                             INTEGER (0..7)

BCCH-ModificationInfo ::=           SEQUENCE {
    mib-ValueTag                        MIB-ValueTag,
    bcch-ModificationTime               BCCH-ModificationTime               OPTIONAL
}

-- Actual value = IE value * 8
BCCH-ModificationTime ::=           INTEGER (0..511)

BSIC ::=                            SEQUENCE {
    ncc                                 NCC,
    bcc                                 BCC
}

CBS-DRX-Level1Information ::=       SEQUENCE {
    ctch-AllocationPeriod               INTEGER (1..256),
    cbs-FrameOffset                     INTEGER (0..255)
}

CDMA2000-Message ::=                SEQUENCE {
    msg-Type                            BIT STRING (SIZE (8)),
    payload                             BIT STRING (SIZE (1..512))
}

CDMA2000-MessageList ::=                SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                            CDMA2000-Message

CDMA2000-UMTS-Frequency-List    ::=     SEQUENCE (SIZE (1..maxNumCDMA2000Freqs)) OF
                                            FrequencyInfoCDMA2000

CellValueTag ::=                        INTEGER (1..4)

--Actual value = 2^(IE value)
ExpirationTimerFactor           ::=     INTEGER (1..8)

FDD-UMTS-Frequency-List         ::=     SEQUENCE (SIZE (1..maxNumFDDFreqs)) OF
                                            FrequencyInfoFDD

FrequencyInfoCDMA2000           ::=     SEQUENCE {
                                            band-Class      BIT STRING (SIZE (5)),
                                            cdma-Freq       BIT STRING (SIZE(11))
}

GSM-BA-Range                    ::=     SEQUENCE {
                                            gsmLowRangeUARFCN       UARFCN,
                                            gsmUpRangeUARFCN        UARFCN
}

GSM-BA-Range-List               ::=     SEQUENCE (SIZE (1..maxNumGSMFreqRanges)) OF
                                            GSM-BA-Range

GSM-Classmark2::=                   OCTET STRING (SIZE (5))

GSM-Classmark3::=                   OCTET STRING

GSM-MessageList ::=                 SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..512))

IdentificationOfReveivedMessage ::= SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        receivedMessageType             ReceivedMessageType
}

InterRAT-ChangeFailureCause ::=     CHOICE {
    configurationUnacceptable           NULL,
```

```
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    unspecified                         NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

InterRAT-UE-RadioAccessCapability ::= CHOICE {
    gsm                                 SEQUENCE {
        gsm-Classmark2                      GSM-Classmark2,
        gsm-Classmark3                      GSM-Classmark3
    },
    cdma2000                            SEQUENCE {
        cdma2000-MessageList                CDMA2000-MessageList
    }
}

InterRAT-UE-RadioAccessCapabilityList ::=   SEQUENCE (SIZE(1..maxInterSysMessages)) OF
                                            InterRAT-UE-RadioAccessCapability

InterRAT-HO-Failure ::=         SEQUENCE {
    interRAT-HO-FailureCause            InterRAT-HO-FailureCause            OPTIONAL,
    interRATMessage                 InterRATMessage                 OPTIONAL
}

InterRAT-HO-FailureCause ::=        CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    interRAT-ProtocolError              NULL,
    unspecified                         NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL
}

InterRATMessage ::=             CHOICE {
    gsm                                 SEQUENCE {
        gsm-MessageList                     GSM-MessageList
    },
    cdma2000                            SEQUENCE {
        cdma2000-MessageList                CDMA2000-MessageList
    }
}

InterRATMessageList ::=         SEQUENCE (SIZE (1..maxSystemCapability)) OF
                                            InterRATMessage

MasterInformationBlock ::=          SEQUENCE {
        mib-ValueTag                    MIB-ValueTag,
        plmn-Type                       PLMN-Type,
        -- TABULAR: The PLMN identity and ANSI-41 core network information
        -- are included in PLMN-Type.
        sibSb-ReferenceList             SIBSb-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

MIB-ValueTag ::=                    INTEGER (1..8)

NCC ::=                             INTEGER (0..7)

PLMN-ValueTag ::=                   INTEGER (1..256)


PredefinedConfigIdentityAndValueTag ::= SEQUENCE {
    predefinedConfigIdentity                PredefinedConfigIdentity,
    predefinedConfigValueTag                PredefinedConfigValueTag    OPTIONAL
}

ProtocolErrorInformation ::=        SEQUENCE {
    diagnosticsType                     CHOICE {
        type1                               SEQUENCE {
            protocolErrorCause                  ProtocolErrorCause
        },
        spare                               NULL
    }
}

ReceivedMessageType ::=             ENUMERATED {
                                        activeSetUpdate,
```

```
                                        cellUpdateConfirm,
                                        counterCheck,
                                        downlinkDirectTransfer,
                                        interRATHandoverCommand,
                                        measurementControl,
                                        pagingType2,
                                        physicalChannelReconfiguration,
                                        physicalSharedChannelAllocation,
                                        radioBearerReconfiguration,
                                        radioBearerRelease,
                                        radioBearerSetup,
                                        rrcConnectionRelease,
                                        rrcConnectionReject,
                                        rrcConnectionSetup,
                                        securityModeCommand,
                                        signallingConnectionRelease,
                                        transportChannelReconfiguration,
                                        transportFormatCombinationControl,
                                        ueCapabilityEnquiry,
                                        ueCapabilityInformationConfirm,
                                        uplinkPhysicalChannelControl,
                                        uraUpdateConfirm,
                                        utranMobilityInformation,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7
}

Rplmn-Information               ::=     SEQUENCE {
                                            gsm-BA-Range-List       GSM-BA-Range-List   OPTIONAL,
                                            fdd-UMTS-Frequency-List FDD-UMTS-Frequency-List
    OPTIONAL,
                                            tdd-UMTS-Frequency-List FDD-UMTS-Frequency-List
    OPTIONAL,
                                            cdma2000-UMTS-Frequency-List    CDMA2000-UMTS-Frequency-
List    OPTIONAL
}

SchedulingInformation ::=           SEQUENCE {
    scheduling                          SEQUENCE {
        segCount                            SegCount                        DEFAULT 1,
        sib-Pos                             CHOICE {
            -- The element name indicates the repetition period and the value
            -- (multiplied by two) indicates the position of the first segment.
            rep4                                INTEGER (0..1),
            rep8                                INTEGER (0..3),
            rep16                               INTEGER (0..7),
            rep32                               INTEGER (0..15),
            rep64                               INTEGER (0..31),
            rep128                              INTEGER (0..63),
            rep256                              INTEGER (0..127),
            rep512                              INTEGER (0..255),
            rep1024                             INTEGER (0..511),
            rep2048                             INTEGER (0..1023),
            rep4096                             INTEGER (0..2047)
        },
        sib-PosOffsetInfo                   SibOFF-List                     OPTIONAL
    }
}

SchedulingInformationSIB ::=            SEQUENCE {
    sib-Type                            SIB-TypeAndTag,
    scheduling                          SchedulingInformation
}

SchedulingInformationSIBSb ::=          SEQUENCE {
    sibSb-Type                          SIBSb-TypeAndTag,
    scheduling                          SchedulingInformation
}

SegCount ::=                        INTEGER (1..16)

SegmentIndex ::=                    INTEGER (1..15)

-- Actual value = 2 * IE value
SFN-Prime ::=                       INTEGER (0..2047)


SIB-Data-fixed ::=                  BIT STRING (SIZE (222))


SIB-Data-variable ::=               BIT STRING (SIZE (1..214))

SIB-ReferenceList ::=               SEQUENCE (SIZE (1..maxSIB)) OF
```

```
                                        SchedulingInformationSIB

SIBSb-ReferenceList ::=             SEQUENCE (SIZE (1..maxSIB)) OF
                                        SchedulingInformationSIBSb

SIB-ReferenceListFACH ::=           SEQUENCE (SIZE (1..maxSIB-FACH)) OF
                                        SchedulingInformationSIB

SIB-Type ::=                        ENUMERATED {
                                        masterInformationBlock,
                                        systemInformationBlockType1,
                                        systemInformationBlockType2,
                                        systemInformationBlockType3,
                                        systemInformationBlockType4,
                                        systemInformationBlockType5,
                                        systemInformationBlockType6,
                                        systemInformationBlockType7,
                                        systemInformationBlockType8,
                                        systemInformationBlockType9,
                                        systemInformationBlockType10,
                                        systemInformationBlockType11,
                                        systemInformationBlockType12,
                                        systemInformationBlockType13,
                                        systemInformationBlockType13-1,
                                        systemInformationBlockType13-2,
                                        systemInformationBlockType13-3,
                                        systemInformationBlockType13-4,
                                        systemInformationBlockType14,
                                        systemInformationBlockType15,
                                        systemInformationBlockType15-1,
                                        systemInformationBlockType15-2,
                                        systemInformationBlockType15-3,
                                        systemInformationBlockType16,
                                        systemInformationBlockType17,
                                        systemInformationBlockType15-4,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7 }

SIB-TypeAndTag ::=                  CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        PLMN-ValueTag,
    sysInfoType3                        CellValueTag,
    sysInfoType4                        CellValueTag,
    sysInfoType5                        CellValueTag,
    sysInfoType6                        CellValueTag,
    sysInfoType7                        NULL,
    sysInfoType8                        CellValueTag,
    sysInfoType9                        NULL,
    sysInfoType10                       NULL,
    sysInfoType11                       CellValueTag,
    sysInfoType12                       CellValueTag,
    sysInfoType13                       CellValueTag,
    sysInfoType13-1                     CellValueTag,
    sysInfoType13-2                     CellValueTag,
    sysInfoType13-3                     CellValueTag,
    sysInfoType13-4                     CellValueTag,
    sysInfoType14                       NULL,
    sysInfoType15                       CellValueTag,
    sysInfoType16                       PredefinedConfigIdentityAndValueTag,
    sysInfoType17                       NULL
    sysInfoType15.1                     CellValueTag,
    sysInfoType15.2                     CellValueTag,
    sysInfoType15.3                     CellValueTag,
    sysInfoType15.4                     CellValueTag,
}

SIBSb-TypeAndTag ::=                    CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        PLMN-ValueTag,
    sysInfoType3                        CellValueTag,
    sysInfoType4                        CellValueTag,
    sysInfoType5                        CellValueTag,
    sysInfoType6                        CellValueTag,
    sysInfoType7                        NULL,
    sysInfoType8                        CellValueTag,
    sysInfoType9                        NULL,
    sysInfoType10                       NULL,
    sysInfoType11                       CellValueTag,
    sysInfoType12                       CellValueTag,
    sysInfoType13                       CellValueTag,
    sysInfoType13-1                     CellValueTag,
    sysInfoType13-2                     CellValueTag,
    sysInfoType13-3                     CellValueTag,
```

```
    sysInfoType13-4                    CellValueTag,
    sysInfoType14                      NULL,
    sysInfoType15                      CellValueTag,
    sysInfoType16                      PredefinedConfigIdentityAndValueTag,
    sysInfoType17                      NULL,
    sysInfoTypeSB1                     CellValueTag,
    sysInfoTypeSB2                     CellValueTag
    sysInfoType15.1                    CellValueTag,
    sysInfoType15.2                    CellValueTag,
    sysInfoType15.3                    CellValueTag,
    sysInfoType15.4                    CellValueTag,
}

SibOFF ::=                         ENUMERATED {
                                       so2, so4, so6, so8, so10,
                                       so12, so14, so16, so18,
                                       so20, so22, so24, so26,
                                       so28, so30, so32 }

SibOFF-List ::=                    SEQUENCE (SIZE (1..15)) OF
                                       SibOFF

SysInfoType1 ::=                   SEQUENCE {
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants,
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType2 ::=                   SEQUENCE {
    -- UTRAN mobility IEs
        ura-IdentityList                URA-IdentityList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType3 ::=                   SEQUENCE {
        sib4indicator                   BOOLEAN,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType4 ::=                   SEQUENCE {
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType5 ::=                   SEQUENCE {
        sib6indicator                   BOOLEAN,
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset
            },
            tdd                             SEQUENCE {
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                midambleConfiguration           MidambleConfiguration       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
    }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}
```

```
SysInfoType6 ::=                    SEQUENCE {
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset,
                csich-PowerOffset               CSICH-PowerOffset           OPTIONAL
            },
            tdd                             SEQUENCE {
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                midambleConfiguration           MidambleConfiguration       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList         OPTIONAL,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList        OPTIONAL,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType7 ::=                    SEQUENCE {
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                ul-Interference                 UL-Interference
            },
            tdd                             NULL
        },
        prach-Information-SIB5-List     DynamicPersistenceLevelList,
        prach-Information-SIB6-List     DynamicPersistenceLevelList         OPTIONAL,
        expirationTimeFactor            ExpirationTimerFactor               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType8 ::=                    SEQUENCE {
    -- User equipment IEs
        cpch-Parameters                 CPCH-Parameters,
    -- Physical channel IEs
        cpch-SetInfoList                CPCH-SetInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType9 ::=                    SEQUENCE {
    -- Physical channel IEs
        cpch-PersistenceLevelsList      CPCH-PersistenceLevelsList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType10 ::=                   SEQUENCE {
    -- User equipment IEs
        drac-SysInfoList                DRAC-SysInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType11 ::=                   SEQUENCE {
        sib12indicator                  BOOLEAN,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType12 ::=                   SEQUENCE {
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13 ::=                   SEQUENCE {
    -- Core network IEs
```

```
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants           OPTIONAL,
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-1 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-RAND-Information        ANSI-41-RAND-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-2 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-UserZoneID-Information  ANSI-41-UserZoneID-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-3 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-PrivateNeighbourListInfo ANSI-41-PrivateNeighbourListInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType13-4 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-GlobalServiceRedirectInfo
                                        ANSI-41-GlobalServiceRedirectInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType14 ::=                   SEQUENCE {
    -- Physical channel IEs
        individualTS-InterferenceList   IndividualTS-InterferenceList,
        expirationTimeFactor            ExpirationTimerFactor               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15 ::=                   SEQUENCE {
    -- Measurement IEs
        ~~up-GPS-CipherAssistance           UP-Cipher-GPS-Data-Indicator        OPTIONAL,~~
        up-GPS-CipherParameters     UP-CipherParameters     OPTIONAL,
        up-GPS-ReferenceLocation    ReferenceLocation~~forSIB~~,
        up-GPS-ReferenceTime        UP-GPS-ReferenceTime,
        ~~up-OTDOA-Assistance         UP-OTDOA-AssistanceSIB              OPTIONAL,~~
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15-1 ::=                 SEQUENCE {
    -- DGPS corrections
        up-GPS-DGPS-Corrections         UP-GPS-DGPS-Corrections
        ~~up-DGPS-SIB-Data                UP-DGPS-SIB-Data~~
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15-2 ::=                 SEQUENCE {
    transmissionTOW                 INTEGER (0..604799),
-- Ephemeris and clock corrections
    satID                           SatID,
    navModel                        NavModel,
~~Ephe    up-Ephe-SIB-Data                UP-Ephe-SIB-Data~~
-- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType15-3 ::=                 SEQUENCE {
    -- Almanac and other data
        transmissionTOW                 INTEGER (0..604799~~1048575~~),
        up-GPS-Almanac                  UP-GPS-Almanac              OPTIONAL,
        up-GPS-IonosphericModel         UP-GPS-IonosphericModel     OPTIONAL,
        up-GPS-UTC-Model                UP-GPS-UTC-Model            OPTIONAL,
        satMask                         BIT STRING (SIZE (1..32))   OPTIONAL,
        lsbTOW                          BIT STRING (SIZE (8))       OPTIONAL,
        ~~up-Alma-SIB-DataList            UP-Alma-SIB-DataList~~
```

```
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}
SysInfoType15-4 ::=                 SEQUENCE {
    -- Measurement IEs
        up-OTDOA-CipherParameters   UP-CipherParameters         OPTIONAL,
        up-OTDOA-AssistanceData     UP-OTDOA--AssistanceData,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions       SEQUENCE {}
}

SysInfoType16 ::=                   SEQUENCE {
    -- Radio bearer IEs
        preDefinedRadioConfiguration    PreDefRadioConfiguration,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoType17 ::=                   SEQUENCE {
    -- Physical channel IEs
        pusch-SysInfoList               PUSCH-SysInfoList               OPTIONAL,
        pdsch-SysInfoList               PDSCH-SysInfoList               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoTypeSB1 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}

SysInfoTypeSB2 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}
}
TDD-UMTS-Frequency-List ::=             SEQUENCE (SIZE (1..maxNumTDDFreqs)) OF
                                            FrequencyInfoTDD
```

3GPP TSG-RAN WG2 Meeting #19 ***R2-010573***
Sophia Antipolis, France, 19 - 23 Feb. 2001

CHANGE REQUEST

⌘	**25.331**	**CR**	**674**	⌘ rev	**r1**	⌘ Current version:	**3.5.0**	⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM [ ] ME/UE [X] Radio Access Network [X] Core Network [ ]

Title:	⌘ Security related corrections to SRNS relocation		
Source:	⌘ TSG-RAN WG2		
Work item code:	⌘	***Date:***	⌘ 20 Feb 2001
Category:	⌘ **F**	***Release:***	⌘ R99
	Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	- IE "Uplink integrity protection activation info" is not included in the IE "Integrity protection mode info". That sentence has been deleted. - In the transparent RRC container from source RNC to target RNC the COUNT-C values for transparent mode radio bearers are missing. These values are needed to be able to synchronise ciphering on transparent mode radio bearers after SRNS relocation.
Summary of change: ⌘	
Consequences if not approved: ⌘	Ciphering on transparent mode radio bearers can get out of synchronisation in SRNS relocation.

Clauses affected: ⌘	8.1.12.3, 8.5.10, 11.5, 14.12.1	
Other specs Affected: ⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘
Other comments: ⌘		

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.1.12.3 Reception of SECURITY MODE COMMAND message by the UE

Upon reception of the SECURITY MODE COMMAND message, the UE shall perform the actions for the received information elements according to 8.6.

If the IE "Security capability" is the same as indicated by variable UE_CAPABILITY_TRANSFERRED, the UE shall:

- suspend all radio bearers and signalling radio bearers (except the signalling radio bearer used to receive the SECURITY MODE COMMAND message on the downlink DCCH in RLC-AM) using RLC-AM or RLC-UM that belong to the CN domain indicated in the IE "CN domain identity", with RLC sequence number greater than or equal to the number in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info";
- set the IE "RRC transaction identifier" in the SECURITY MODE COMPLETE message to the value of "RRC transaction identifier" in the entry for the SECURITY MODE CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set:
  - include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable, for the respective radio bearer and signalling radio bearer;
- when the radio bearers and signalling radio bearers have been suspended:
  - send a SECURITY MODE COMPLETE message on the uplink DCCH in AM RLC, using the old ciphering and the new integrity protection configurations;
- when the successful delivery of the SECURITY MODE COMPLETE message has been confirmed by RLC:
  - resume data transmission on any suspended radio bearer and signalling radio bearer mapped on RLC-AM or RLC-UM;
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends. If a RLC reset or re-establishment occurs after the SECURITY MODE COMPLETE message has been confirmed by RLC, but before the activation time for the new ciphering configuration has been reached, then the activation time shall be ignored and the new ciphering configuration shall be applied immediately after the RLC reset or RLC re-establishment.

For radio bearers and signalling radio bearers used by the CN indicated in the IE "CN domain identity", the UE shall:

- if a new integrity protection key has been received:
  - in the downlink:
    - use the new key;
    - set the HFN component of the downlink COUNT-I to zero at the RRC sequence number indicated in IE "Downlink integrity protection activation info" included in the IE "Integrity protection mode info";

  in the uplink:

    use the new key;

    - set the HFN component of the uplink COUNT-I to zero at the RRC sequence number indicated in IE "Uplink integrity protection activation info"~~ included in the IE "Integrity protection mode info"~~;
- if a new ciphering key is available:
  - in the downlink:
    - use the new key;
    - set the HFN component of the downlink COUNT-C to zero at the RLC sequence number indicated in IE "Radio bearer downlink ciphering activation time info" in the IE "Ciphering mode info";
  - in the uplink:

- use the new key;
- set the HFN component of the uplink COUNT-C to zero at the RLC sequence number indicated in IE "Radio bearer uplink ciphering activation time info".

If the IE "Security capability" is not the same as indicated by the variable UE_CAPABILITY_TRANSFERRED, the UE shall release all its radio resources, enter idle mode and the procedure ends on the UE side. Actions the UE shall perform when entering idle mode are given in subclause 8.5.2.

8.5.10 Integrity protection

Integrity protection shall be performed on all RRC messages, with the following exceptions:

HANDOVER TO UTRAN COMPLETE

PAGING TYPE 1

PUSCH CAPACITY REQUEST

PHYSICAL SHARED CHANNEL ALLOCATION

RRC CONNECTION REQUEST

RRC CONNECTION SETUP

RRC CONNECTION SETUP COMPLETE

RRC CONNECTION REJECT

RRC CONNECTION RELEASE (CCCH only)

SYSTEM INFORMATION

SYSTEM INFORMATION CHANGE INDICATION

TRANSPORT FORMAT COMBINATION CONTROL (TM DCCH only)

NOTE: MEASUREMENT REPORT needs to be studied when used on UM as in some cases there could be synchronization problems with the RRC SN.

For each signalling radio bearer, the UE shall use two RRC hyper frame numbers,

- "Uplink RRC HFN";
- "Downlink RRC HFN".

and two message sequence numbers,

- "Uplink RRC Message sequence number";
- "Downlink RRC Message sequence number".

The above information is stored in the variable INTEGRITY_PROTECTION_INFO per signalling radio bearer (RB 0-4).

Upon the first activation of integrity protection for an RRC connection, UE and UTRAN initialise the "Uplink RRC Message sequence number" and "Downlink RRC Message sequence number" for all signalling radio bearers to zero. The UE and UTRAN apply the sequence numbers for the RRC message activating integrity protection thereafter for all subsequent messages when integrity protection is activated. The RRC message sequence number (RRC SN) is incremented for every integrity protected RRC message. If the same RRC message is sent repeatedly (e.g. RRC CONNECTION RELEASE, RRC CONNECTION RELEASE COMPLETE) the corresponding RRC SN is not incremented.

11.5 RRC information between network nodes

```
Internode-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    HandoverToUTRANCommand-r3,
    MeasurementReport,
    PhysicalChannelReconfiguration-r3,
    RadioBearerReconfiguration-r3,
```

```
    RadioBearerRelease-r3,
    RadioBearerSetup-r3,
    TransportChannelReconfiguration-r3,
    UECapabilityInformation
FROM PDU-definitions

-- Core Network IEs :

    CN-DomainIdentity,
    CN-DomainInformationList,
    NAS-SystemInformationGSM-MAP,
-- UTRAN Mobility IEs :
    CellIdentity,
    URA-Identity,
-- User Equipment IEs :
    C-RNTI,
    RRC-MessageSequenceNumber,
    START-Value,
    STARTList,
    U-RNTI,
    UE-RadioAccessCapability,
-- Radio Bearer IEs :
    PDCP-InfoReconfig,
    PredefinedConfigValueTag,
    RAB-InformationSetupList,
    RB-Identity,
    RB-MappingInfo,
    RLC-Info,
    RLC-SequenceNumber,
    SRB-InformationSetupList,
-- Transport Channel IEs :
    CPCH-SetID,
    DL-CommonTransChInfo,
    DL-AddReconfTransChInfoList,
    DRAC-StaticInformationList,
    UL-CommonTransChInfo,
    UL-AddReconfTransChInfoList,
-- Measurement IEs :
    MeasurementIdentity,
    MeasurementReportingMode,
    MeasurementType,
    AdditionalMeasurementID-List,
-- Other IEs :
    InterRATMessage
FROM InformationElements

    maxCNdomains,
    maxNoOfMeas,
    maxPredefConfig,
    maxRABsetup,
    maxRB,
    maxSRBsetup,
    maxTrCH
FROM Constant-definitions;

-- RRC information transferred between network nodes,
-- per group of information transfers having same endpoint
-- Alike class definitions for RRC PDUs

-- ***************************************************
--
-- RRC information, to target RNC
--
-- ***************************************************

-- ***************************************************
--
-- RRC information, target RNC to source RNC
--
-- ***************************************************

T-RNC-ToSRNC-Container ::= SEQUENCE {
    message             T-RNC-ToSRNC-ContainerType
}

T-RNC-ToSRNC-ContainerType::= CHOICE {
    radioBearerSetup                    RadioBearerSetup-r3,
    radioBearerReconfiguration          RadioBearerReconfiguration-r3,
    radioBearerRelease                  RadioBearerRelease-r3,
    transportChannelReconfiguration     TransportChannelReconfiguration-r3,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration-r3,
    extension                           NULL
}

-- ***************************************************
--
```

```
-- RRC information, target RNC to source RAT
--
-- **************************************************

-- Container definitions, alike PDU definitions
-- RRC Container definition, to target RNC


-- **************************************************
--
-- SRNC Relocation information
--
-- **************************************************

SRNC-RelocationInfo ::=             SEQUENCE {
    -- Non-RRC IEs
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
        cipheringStatus                 CipheringStatus,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        cipheringInfoPerRB-List         CipheringInfoPerRB-List             OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        integrityProtectionStatus       IntegrityProtectionStatus,
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability,
    -- Other IEs
        interRATMessage             InterRATMessage                 OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationList            OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList                  OPTIONAL,
    -- Radio bearer IEs
        preConfigStatusInfo             PreConfigStatusInfo,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList            OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList         OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL
}

-- RRC Container definition, target RNC to source RNC
-- Nothing new, only re-using RRC PDUs
--
-- RRC Container definition, target RNC to source system
-- Nothing new, re-using RRC PDUs (HandoverToUTRANCommand)

-- IE definitions

CalculationTimeForCiphering ::=     SEQUENCE {
    cell-Id                             CellIdentity,
    sfn                                 INTEGER (0..4095)
}

CipheringInfoPerRB ::=              SEQUENCE {
    dl-HFNSTART                             BIT STRING (SIZE (20..25))START-Value,
    ul-HFNSTART                         BIT STRING (SIZE (20..25))START-Value
}

-- TABULAR: Multiplicity value numberOfRadioBearers has been replaced
-- with maxRB.
CipheringInfoPerRB-List ::=         SEQUENCE (SIZE (1..maxRB)) OF
                                        CipheringInfoPerRB

CipheringStatus ::=                 ENUMERATED {
                                        started, notStarted }

COUNT-CList ::=                     SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        COUNT-CSingle
```

```
COUNT-CSingle ::=                       SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    count-C                             BIT STRING (SIZE (32))
}

ImplementationSpecificParams ::=    BIT STRING (SIZE (1..512))


IntegrityProtectionStatus ::=       ENUMERATED {
                                        started, notStarted }

MeasurementCommandWithType ::=      CHOICE {
    setup                               MeasurementType,
    modify                              NULL,
    release                             NULL
}

OngoingMeasRep ::=                  SEQUENCE {
    measurementIdentity         MeasurementIdentity,
    measurementCommandWithType          MeasurementCommandWithType,
    -- TABULAR: The CHOICE Measurement in the tabular description is included
    -- in the IE above.
    measurementReportingMode            MeasurementReportingMode            OPTIONAL,
    additionalMeasurementID-List        AdditionalMeasurementID-List        OPTIONAL
}

OngoingMeasRepList ::=              SEQUENCE (SIZE (1..maxNoOfMeas)) OF
                                        OngoingMeasRep

PreConfigStatusInfo ::=             SEQUENCE (SIZE (1..maxPredefConfig)) OF
                PredefinedConfigValueTag

SRB-SpecificIntegrityProtInfo ::=   SEQUENCE {
    rb-Identity                         RB-Identity                         OPTIONAL,
    ul-RRC-HFN                          BIT STRING (SIZE (28)),
    dl-RRC-HFN                          BIT STRING (SIZE (28)),
    ul-RRC-SequenceNumber               RRC-MessageSequenceNumber,
    dl-RRC-SequenceNumber               RRC-MessageSequenceNumber
}

SRB-SpecificIntegrityProtInfoList ::= SEQUENCE (SIZE (4..maxSRBsetup)) OF
                                        SRB-SpecificIntegrityProtInfo

StateOfRRC ::=                      ENUMERATED {
                                        cell-DCH, cell-FACH,
                                        cell-PCH, ura-PCH }

StateOfRRC-Procedure ::=            ENUMERATED {
                                        awaitNoRRC-Message,
                                        awaitRRC-ConnectionRe-establishmentComplete,
                                        awaitRB-SetupComplete,
                                        awaitRB-ReconfigurationComplete,
                                        awaitTransportCH-ReconfigurationComplete,
                                        awaitPhysicalCH-ReconfigurationComplete,
                                        awaitActiveSetUpdateComplete,
                                        awaitHandoverComplete,
                                        sendCellUpdateConfirm,
                                        sendUraUpdateConfirm,
                                        sendRrcConnectionReestablishment,
                                        otherStates }

END
```

14.12.1 RRC Information to target RNC

RRC Information to target RNC may either be sent from source RNC or from another RAT. In case of handover to UTRAN, this information originates from another RAT, while in case of SRNC relocation the RRC information originates from the source RNC. In case of SRNC information, the RRC information transferred specifies the configuration of RRC and the lower layers it controls, e.g., including the radio bearer and transport channel configuration. It is used by the target RNC to initialise RRC and the lower layer protocols to facilitate SRNC relocation in a manner transparent to the UE.

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
CHOICE case	MP			
>Handover to UTRAN				
>>UE radio access capability	OP		UE radio access capability 10.3.3.42	
>>UE system specific capability	OP		UE system specific capability 14.13.2.4	
>>UE security information	OP		UE security information 14.13.2.2	
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	
>SRNC relocation				
>>State of RRC	MP		Enumerated (CELL_DCH, CELL_FACH,CELL_PCH, URA_PCH)	
>>State of RRC procedure	MP		Enumerated (await no RRC message, Complete, await RB Setup Complete, await RB Reconfiguration Complete, await RB Release Complete, await Transport CH Reconfiguration Complete, await Physical CH Reconfiguration Complete, await Active Set Update Complete, await Handover Complete, send Cell Update Confirm, send URA Update Confirm, , others)	
Ciphering related information				
>>Ciphering status	MP		Enumerated(Not started, Started)	
>>Calculation time for ciphering related information	CV *Ciphering*			Time when the ciphering information of the message were calculated, relative to a cell of the target RNC
>>>Cell Identity	MP		Cell Identity 10.3.2.2	Identity of one of the cells under the target RNC and included in the active set of the current call
>>>SFN	MP		Integer(0..4095)	
>>COUNT-C list	CV *Ciphering*	1 to <maxCN domains>		COUNT-C values for radio bearers using transparent mode RLC
>>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>COUNT-C	MP		Bitstring(32)	
>>Ciphering info per radio bearer	OP	1 to <maxRB>		For signalling radio bearers this IE is mandatory.
>>>RB identity	MP		RB identity 10.3.4.16	

>>>Downlink HFN~~START~~	MP		Bitstring(20..25)~~START 10.3.3.38~~	This IE is either RLC AM HFN (20 bits) or RLC UM HFN (25 bits)
>>>Uplink HFN~~START~~	MP		Bitstring(20..25)~~START 10.3.3.38~~	This IE is either RLC AM HFN (20 bits) or RLC UM HFN (25 bits)
Integrity protection related information				
>>Integrity protection status	MP		Enumerated(Not started, Started)	
>>Signalling radio bearer specific integrity protection information	CV *IP*	4 to <maxSRBsetup>		
~~RB identity~~	~~CV *SRB5Plus*~~		~~RB identity 10.3.4.16~~	~~For RB#0-4 the RB identity is not required~~
>>> Uplink RRC HFN	MP		Bitstring (28)	
>>> Downlink RRC HFN	MP		Bitstring (28)	
>>> Uplink RRC Message sequence number	MP		Integer (0..15)	
>>> Downlink RRC Message sequence number	MP		Integer (0..15)	
>>Implementation specific parameters	OP		Bitstring (1..512)	
RRC IEs				
UE Information elements				
>>U-RNTI	MP		U-RNTI 10.3.3.47	
>>C-RNTI	OP		C-RNTI 10.3.3.8	
>>UE radio access Capability	MP		UE radio access capability 10.3.3.42	
Other Information elements				
>>Inter System message (inter system classmark)	OP		Inter-RAT message 10.8.6	
UTRAN Mobility Information elements				
>>URA Identifier	OP		URA identity 10.3.2.6	
CN Information Elements				
>>CN common GSM-MAP NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
>>CN domain related information	OP	1 to <MaxCNdomains>		CN related information to be provided for each CN domain
>>>CN domain identity	MP			
>>>CN domain specific GSM-MAP NAS system info	MP		NAS system information (GSM-MAP) 10.3.1.9	
Measurement Related Information elements				
>>For each ongoing measurement reporting	OP	1 to <MaxNoOfMeas>		
>>>Measurement Identity	MP		Measurement identity 10.3.7.48	
>>>Measurement Command	MP		Measurement command 10.3.7.46	
>>>Measurement Type	CV Setup		Measurement type 10.3.7.50	

>>>Measurement Reporting Mode	OP		Measurement reporting mode 10.3.7.49	
>>>Additional Measurements list	OP		Additional measurements list 10.3.7.1	
>>>CHOICE Measurement	OP			
>>>>Intra-frequency				
>>>>>Intra-frequency cell info	OP		Intra-frequency cell info list 10.3.7.33	
>>>>>Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
>>>>>Intra-frequency reporting quantity	OP		Intra-frequency reporting quantity 10.3.7.41	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			
>>>>>>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Inter-frequency				
>>>>>Inter-frequency cell info	OP		Inter-frequency cell info list 10.3.7.13	
>>>>>Inter-frequency measurement quantity	OP		Inter-frequency measurement quantity 10.3.7.18	
>>>>>Inter-frequency reporting quantity	OP		Inter-frequency reporting quantity 10.3.7.21	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-frequency measurement reporting criteria			Inter-frequency measurement reporting criteria 10.3.7.19	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Inter-RAT				
>>>>>Inter-RAT cell info	OP		Inter-RAT cell info list 10.3.7.23	
>>>>>Inter-RAT measurement quantity	OP		Inter-RAT measurement quantity 10.3.7.29	
>>>>>Inter-RAT reporting quantity	OP		Inter-RAT reporting quantity 10.3.7.32	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			

>>>>>>Inter-RAT measurement reporting criteria			Inter-RAT measurement reporting criteria 10.3.7.30	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Traffic Volume				
>>>>>Traffic volume measurement Object	OP		Traffic volume measurement object 10.3.7.70	
>>>>>Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
>>>>>Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
>>>>>CHOICE report criteria	OP			
>>>>>>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Quality				
>>>>>Quality measurement Object	OP		Quality measurement object	
>>>>>CHOICE report criteria	OP			
>>>>>>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.58	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>UE internal				
>>>>>UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.79	
>>>>>UE internal reporting quantity	OP		UE internal reporting quantity 10.3.7.82	
>>>>>CHOICE report criteria	OP			
>>>>>>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.80	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>UP				
>>>>>LCS reporting quantity	OP		LCS reporting quantity 10.3.7.111	
>>>>>CHOICE report criteria	OP			
>>>>>>LCS reporting criteria			LCS reporting criteria 10.3.7.110	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting				
Radio Bearer Information Elements				
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	

>>Signalling RB information list	MP	1 to <maxSRBsetup>		For each signalling radio bearer
>>>Signalling RB information	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information list	OP	1 to <maxRABsetup>		Information for each RAB
>>>RAB information	MP		RAB information to setup 10.3.4.10	
Transport Channel Information Elements				
Uplink transport channels				
>>UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
>>UL transport channel information list	OP	1 to <MaxTrCH>		
>>>UL transport channel information	MP		Added or reconfigured UL TrCH information 10.3.5.2	
>>CHOICE mode	OP			
>>>FDD				
>>>>CPCH set ID	OP		CPCH set ID 10.3.5.5	
>>>>Transport channel information for DRAC list	OP	1 to <MaxTrCH>		
>>>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>>>TDD				(no data)
Downlink transport channels				
>>DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
>>DL transport channel information list	OP	1 to <MaxTrCH>		
>>>DL transport channel information	MP		Added or reconfigured DL TrCH information 10.3.5.1	
>>Measurement report	OP		MEASUREMENT REPORT 10.2.17	
>spare				(no data) Criticality: reject

Multi Bound	Explanation
MaxNoOfMeas	Maximum number of active measurements, upper limit 16

Condition	Explanation
Setup	The IE is mandatory when the IE Measurement command has the value "Setup", otherwise the IE is not needed.
Ciphering	The IE is mandatory when the IE Ciphering Status has the value "started" and the ciphering counters need not be reinitialised, otherwise the IE is not needed.
IP	The IE is mandatory when the IE Integrity protection status has the value "started" and the integrity protection~~ciphering~~ counters need not be reinitialised, otherwise the IE is not needed.
~~*SRB5Plus*~~	~~The IE is mandatory when more than 5 signalling radio bearers are included~~
PDCP	The IE is mandatory when the PDCP Info IE is present, otherwise the IE is not needed.